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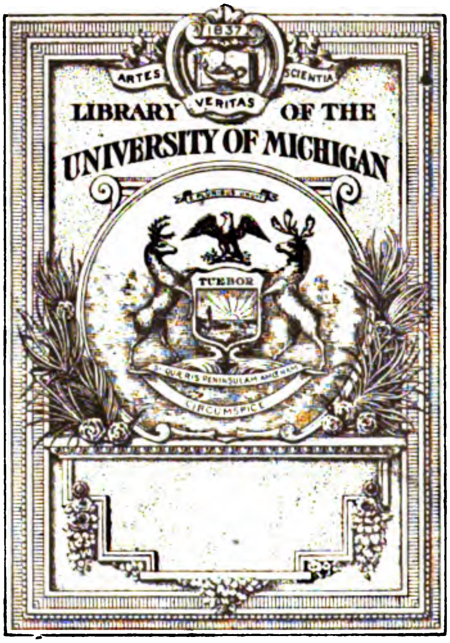
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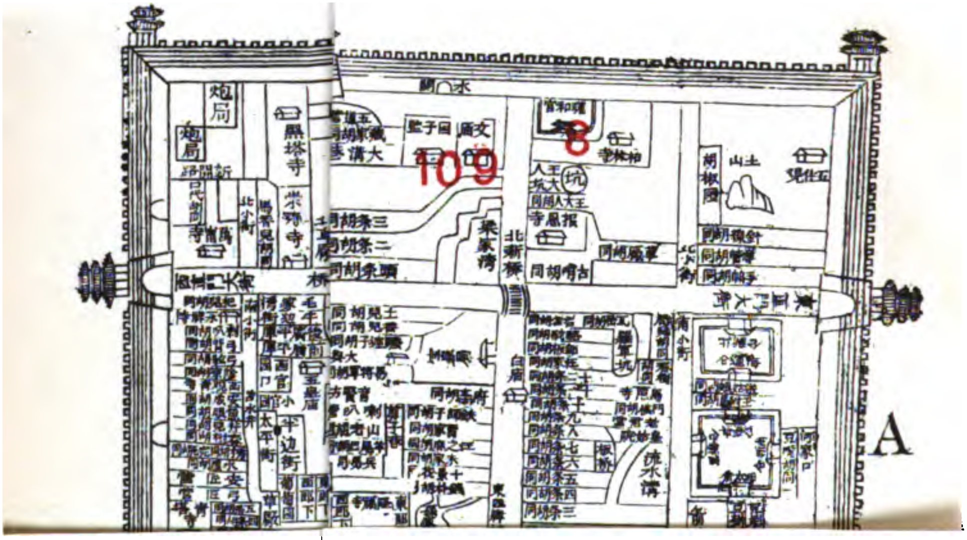
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MANCHESTER GEOGRAPHICAL SOCIETY.

PEKING AND THE PEKINGESE

(See Chinese Map of Peking.)

BY THE REV. GEORGE OWEN, OF THE LONDON MISSIONARY SOCIETY, PEKING.

[Addressed to the Members, January 25th, 1889.]

CHINA, during the 4,000 years of her history, has changed her dynasty about twenty-eight times, and each new dynasty has generally preferred to build itself a new capital. Peking, therefore, is not so old as we might expect—still, it has a pretty long pedigree. It has been a capital, with brief interruptions since A.D. 936, and the spot where it stands is old historic ground.

It was there that a descendant of the semi-mythical emperor, Huangti, in 1121 B.C., built the city of Chi, and ruled as feudal lord. From the seventh to the third centuries B.C. this city of Chi was the capital of the principality of Yen, which long played an important part in North China. But in 222 B.C., or thereabouts, Ch'in-shi-huang, builder of the Great Wall, and first absolute monarch of China, destroyed it. It reappeared, however, and during the fourth century of our era, Chi was the capital of a small Tartar state. This ancient city probably stood a little to the north of the present city of Peking. One gateway and two hillocks are still pointed out as being remains of Chi; but they may belong to the much later city of Kublai.

Then the old city of Chi was probably destroyed, and a new city, called among other names Yen, was built a little to the south-west of the present city. Yen is still the poetic and literary name of Peking. There is a fine pagoda, the Tien-ning-sze, belonging to this period, just outside the west wall of the present southern city, covered with Buddhist carvings. It was built about A.D. 550, and was probably then inside the city.

During the celebrated Tang dynasty, which ruled China from A.D. 618 to 907, the Elizabethan period of Chinese literature, this second city appears under the name of Yiu-chou, and was the residence of a military governor-general. There is a temple of this period, or its lineal descendant, in the south-west corner of the present southern city. A monument in this temple states that the temple was built A.D. 645. Its ancient name was Min-chung-sz; now it is called Fa-yuan-sz.

In A.D. 936 the Chi-tan Tartars conquered the north of China, and made Yiu-chou the capital of their Chinese possessions, and called it Nan-ching, or southern capital, their northern capital being in Tartary. It was subsequently named Yen-ching, or capital of Yen. It was a large city, twelve miles in circumference. But in 1122 the Chinese retook the city, and degraded it to a prefectural city, calling it Yen-ching-fu. But they only held it for three years. It was then (1125) taken by the Nüchen Tartars, known in Chinese history as the Chin, or Golden Dynasty, who rebuilt it and made it their capital. The new city was called Chung-tu, or middle capital, and would seem to have consisted of four concentric walled squares, the outermost of which was twenty-five miles in circuit and the next ten.

The capital of the Chins was partly on the site of the present southern city of Peking, but lay mostly beyond it to the south and west. The western portion of the present city stands on the eastern portion of the old Chin city. The Kuang-en Monastery and the Tien-en Pagoda, now just outside the walls of the southern city, were inside the Chin capital. Between two or three miles south-west of the existing city there is a rampart, over two miles in length, which tradition says is the old wall of Chung-tu. A portion of the northern wall may also be traced near the north-west corner of the present southern city.

But the city again changed masters. It was taken by one of the armies of the great Mongol conqueror, Genghiz Khan, in 1215, and his grandson, Kublai, made it his capital in 1264. Told by his astrologers that the old city would be rebellious and be a danger to his rule, he built a new city in 1267, a little to the north-east of the old Chin city.

Kublai's new city was called, in Chinese, Ta-tu, or Great Capital, and in Mongol, Khanbalih, City of the Khan. It was 60 *li*, or 20 miles, in circumference, according to the history of the Mongol dynasty, and had eleven gates. It stood where the northern city of Peking now stands, but was considerably larger, stretching 5 *li*, or nearly two miles, farther north. Kublai might well call his new city the Great Capital, for it was not only great in itself, but the metropolis of an empire far larger than Rome ever ruled in her palmiest days, perhaps the largest empire ever ruled by one man.

The Venetian traveller, Marco Polo, accompanied his father and uncle to China in 1275, and lived there till 1292, a period of eighteen years. He was a favourite of Kublai, who employed him on several important missions, and made him governor of Yang-chou. In his travels he gives a glowing account of Ta-tu, the great capital of Kublai, which, after its Mongol name, he calls Cambaluc. He says the city was a square 24 miles in circuit, each side being six miles long. This, however, does not agree with the Chinese account, which only gives 20 miles. The walls were 50 feet high, and pierced by 12 gates surmounted by lofty towers, each gate being guarded by 1,000 soldiers. The palace, the outer wall of which was four miles in circumference, was guarded by 12,000 men. The streets were broad, and extended the whole length of the city. The population was immense, and overflowed into the suburbs, which contained more people than the city itself, large as that was. To show the greatness of the population, he says there were over 20,000 prostitutes outside the gates. The trade was very great, and large numbers of foreign merchants lived or lodged in the suburbs. As an example of the immense traffic, he mentions that not fewer than 1,000 bales of silk entered the city daily. It was a great commercial emporium, as well as a great capital.

Kublai died in the early part of 1294, and was succeeded by his grandson Timur. But the dynasty of the Great Khan did not last long. Degeneracy soon set in. In order to hold the southern Chinese in check, the seat of government was removed to Hangchou. This may have delayed but it did not avert the day of doom. The Chinese, tired of their foreign masters, revolted, and after years of struggle drove the Mongols from the thrown in 1368, just 89 years after the conquest of South China by Kublai.

The victorious Chinese general, Chu Yuan-chang, proclaimed himself emperor. He was of very humble origin, and had been a priest, then a soldier in the ranks, but possessed great vigour and unusual organising power. When Ta-tu, the capital of the great Kublai, fell into his hands, he ordered five *li*, or nearly two miles, to be cut off from the north end, and constituted the remainder a prefectural city. He established his court at Chiang-ning-fu on the Yangtse river and called it Nanking or the southern capital. Thus Peking again suffered eclipse, but its fortunes soon revived.

The first ruler of the Ming, whose reign-title was Hung-wu, died in 1398, leaving the sceptre to his grandson Chien-wen. This his son Yunglo, then ruling in the old northern capital as Prince of Yen, did not approve of, and he marched an army on Nanking. The young emperor fled, and is said to have become a Buddhist monk and lived to a great age. This was in 1403. In 1409 Yunglo abandoned Nanking and established his court in the city of Kublai, and called it Peking, or northern capital, and it has been the capital of the empire ever since. The same year he began to reconstruct the walls. Nearly two miles of the north end of the old Mongol city had been cut off by Hung-wu and a new north wall built where we now find it. The remaining walls Yunglo reconstructed and faced the whole with stone and brick. The work was finished in 1437. The abandoned portion of Kublai's city can still be traced. A high earthern rampart marks the site of the old walls, and four gaps in the rampart, one in the east and west portions and two in the north, indicate the site of the gates.

After the building of the city, it would seem that a southern suburb sprang up, having a large population and thriving trade. To protect this important suburb, Chia-ching, in 1543, built the present southern city, usually called by foreigners the Chinese city. It immediately adjoins the city of Yunglo, so that the south wall of the one forms the north wall of the other.

This completed the capital of the Mings, and the city had rest for one hundred years. Then came trouble. In 1644 the last emperor of the Mings hanged himself on a crab-apple tree on Prospect Hill. The Manchus entered Peking, and there they are still. They found a noble capital ready made, and settled in it. They altered little, and added little. Peking is just the same as when the old Mings bore sway there between 200 and 400 years ago, except that it is older, dirtier, and more dilapidated. Let us examine it, and make a few notes as we go along.

Peking consists of two cities, called by the Chinese the inner and outer cities, and by foreigners the Tartar and Chinese cities. But only a wall, pierced by three gates, divides them, and the two are one.

In shape, the south or Chinese city is a parallelogram, about five miles long by two broad. It overlaps the north or Tartar city on the east and west sides. It would seem that the original intention was to carry the walls right round the Tartar city. But it was not done; they were carried just far enough to overlap the south-east and south-west corners, and stopped. The walls are 22ft. high and 15ft. broad at the top, and a little over nine miles (28 *li*) in length. (This, of course, does not include the south wall of the Tartar city.) The southern half of the city is waste land, graveyards, and kitchen gardens, while two large slices are occupied by the Altar of Heaven and the Altar of Agriculture. But the half adjoining the Tartar city is thickly populated, and is crowded with shops of every description, especially the part just outside the central gate, called by the Chinese the Chien Men. Nearly all the important business of Peking, both wholesale and retail, is done there. All the large banks and mercantile houses are near this gate. There is a labyrinth of streets, and the shops are closely packed; every foot of ground is precious. Generally each street, or each section of street, is devoted to a particular business, fans and pictures here, silks and satins there. Nearly everything the world produces can be bought in those well-stocked shops and bazaars. Manchester goods are there in abundance. The streets present a busy and picturesque scene. But they are ill-kept and mostly very dirty. The business of Peking is mainly local. There is a small export trade in artificial flowers, hats, boots, and tobacco pouches. But the imports greatly exceed the exports.

The Altar of Heaven and the Altar of Agriculture are in the southern part of the city; and in the western part, and just outside the walls, are several ancient temples well worth visiting. This western portion stands on the site of several ancient cities—Chungtu, the capital of the Nüchen Tartars (1125); Yenching, the capital of the Chitan Tartars (936); and of the still more ancient Yiu-chou and Yen (500—900). The antiquary will find interesting relics of those vanished cities.

The northern, or, as the Chinese call it, the inner city consists of three nearly concentric walled squares—the Tartar city, the Imperial city, and the Palace.

The walls of the Tartar city are very imposing, and the approaching traveller cannot fail to admire them. They are 45½ft. high and 47½ft. broad at the top. The wall is built of earth, faced on both sides with stone slabs below and large bricks above. The top is paved with large brick flags and protected by a crenelated parapet on each side. It would make a splendid promenade if allowed to be used for that purpose. At intervals of 60 yards the wall is strengthened by broad deep buttresses, on which here and there guard-houses are built. The wall is nearly 14 miles (41 *li*) in circuit, and is pierced by nine gates, three on the south side leading into the southern city, and two each on the east, west, and north sides. Each gate is protected on the outside by a semicircular wall or *enceinte*, and surmounted by a huge tower over 100ft. high (99 Chinese feet), and loopholed like an old three-decker. On each of the four corners of the city stands another enormous tower similarly loopholed. Seen from a distance these towers present a very striking appearance. The city is considerably longer from east to west than from north to south, the north and south walls being four miles long, while the east and west walls are only three.* The principal streets run the entire length of the city, and are over 100ft. wide, and were originally much wider, the shops on both sides having crept forward. From these main streets the smaller streets branch off at right angles. Where the great streets cross each other they are spanned by four ornamental arches. Single arches are also thrown across the large streets, at important points, for ornamental purposes. The main streets are mostly devoted to business, while the smaller ones are occupied by private residences. In the width of its streets Peking is a great contrast to most Chinese cities. In the south they are so narrow that a person standing in the centre and spreading out his arms can touch both sides. Peking owes this feature to the great Mongol emperor Kublai, who, rather than the Chinese emperor Yunglo, must be considered the builder of Peking.

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* The north wall measures 6,790 metres = 11·81 *li*; the south wall, 6,690 metres = 11·64 *li*; the east wall, 5,330 metres = 9·27 *li*; the west wall, 4,910 metres = 8·54 *li*.

A long way inside of this great wall, towards the centre of the city, there is another enclosure called the Huang Cheng or Imperial City. It is six miles in circumference, and has four principal gates corresponding with the four cardinal points. A good deal of this enclosure is occupied by the imperial pleasure lakes, pay offices for the troops, temples, and other public buildings. Still the resident population is not small, and there are thriving business streets.

Inside this there is another walled enclosure, called the Purple Forbidden City, surrounded by a broad deep moat. It is a little over two miles (6·3 *li*) in circuit. This is the Imperial Palace, where the Son of Heaven, ruler of over 300,000,000 of people, lives. But the high wall shuts him and his palaces from view. A glimpse of the yellow tiled roofs is all the most curious can get.

But the imperial pleasure grounds are outside the Forbidden City, and can be seen if not entered. On the north of the palace, and separated from it by the moat and a narrow road, is the Ching Shan, or Prospect Hill. It is an artificial hill, about 150 or 200 feet high, probably made with the earth dug out of the neighbouring lakes. Tradition says there is a large quantity of coal stored away in this hill against a possible winter siege, and for this reason it is commonly called the Coal Hill. It is a picturesque hill, covered with trees, and its five peaks are each crowned with a Buddhist shrine. It was on this hill that the last emperor of the Ming dynasty hanged himself just before the Manchus took Peking. Of course, it is surrounded by a wall, and, equally of course, the public are excluded. It is a good mile and a half in circumference. The hill serves a useful as well as an ornamental purpose—it protects the palace from the malign influences of the north.

On the west side of the palace and Prospect Hill are the imperial pleasure lakes, spanned by a splendid marble bridge, 660 feet long. The view from this bridge is the finest in Peking. The lake extends a considerable distance north and south, and is covered in summer with lilies of various sorts, notably the pink-flowered lotus, filling the air with delicious perfume. The winding shores of the lake are dotted over with clumps of trees, with temples, pavilions, and summer-houses, some of them projecting far out into the lake. At the eastern foot of the bridge is a high round wall, called by the Chinese the Round City, enclosing an old temple of the thirteenth century, and several venerable white pines. On the north side of the bridge is an island, some 100 feet high and about half a mile in circumference, crowned by a large white dagoba. The island is dotted over with summer-houses and temples. There is an altar to the patron god of silk, surrounded by mulberry trees. Here the empress comes annually to feed the silkworms, as an example of industry to the women of the empire. There is a tradition that the earth to form this island was carted all the way from the borders of Mongolia. Some knowing geomancer told one of the Chin emperors that the possession of the empire depended on the possession of a certain hill; so the hill was bought and carted to Peking. Both lake and island date from the twelfth century, or time of the Chin dynasty. On this lake the emperor occasionally takes a little boating. Then the bridge, and all the approaches to the lake, are closed to the public. The Son of Heaven is too sacred to be seen by vulgar eyes. This bridge has recently been closed to the public altogether, which is a real misfortune to residents and visitors, as it deprives them of the only bit of pretty scenery in Peking, and shuts up the shortest route between the east and west parts of the city.

Seen from the top of the great outer wall, Peking looks well. The yellow tiled roofs of the imperial palace and larger temples, the imperial pleasure lakes and hills, the green tiled roofs of the imperial princes and higher nobles, the numerous temples and public buildings, and the immense number of fine trees growing in the courts of both rich and poor all over the city, impress the beholder with its magnificence and beauty.

But as soon as he comes down from the walls the pleasing illusion is dispelled. The streets and lanes are neither paved nor macadamised, but consist of earth trodden hard by innumerable feet. In dry weather they are deep in dust, and in wet deep in mud. They are filthy, too, with the refuse of numberless courts and kitchens, and foul with every nameable stench. They are the common midden heap and cesspool of the city. Everything is cast into the street to reek and rot, for dust carts are unknown. Originally the city had a good system of drainage, but now the drains in many places are broken down and pour their malodorous filth into the streets. Along the main thoroughfares, at short intervals, the drains are uncovered, that the street waterers may get at the sewage to water the streets. This is done every afternoon, between four and six o'clock, at which time particularly the possession of a nose is a sore infliction. The indifference of the Chinese suggests the question whether they have the sense of smell or not. But it is in April and May that Peking is foulest. The drains are then opened at intervals of two or three hundred yards for spring cleaning. The thick liquid filth is drawn up in buckets, poured into cesspools along the streets, and there left to dry. The smells during that drying process are foul in the extreme. The filthiness of the city is further increased by the disgusting habits of the men, who make every corner and blank wall a place of convenience.

Yet, strange to say, Peking is fairly healthy, even for Europeans. According to our Western ideas, such a place should be a plague spot, and human life should run a very brief course. As a matter of fact, epidemics seldom occur, and three-quarters of a million of people enjoy average health and longevity. If fever and cholera were carried about in bad smells or lurked in fetid drains, Peking and every other city in China would be uninhabitable. I attribute the comparative immunity of the Chinese from these and like diseases to the fact that they very rarely drink cold water, which is generally impure, experience having taught them its dangers, but boiling water, warm tea, or thin broth.

In the streets, nothing can be seen of those palaces, mansions, temples, and trees, which we saw from the top of the city wall. They are walled in and invisible. Only the shops face the streets. Some of these are elaborately carved and beautifully gilded, particularly the silversmiths, confectioners, and tea-dealers. But there are no glass or plate windows decorated with choice goods, as in London or Paris. The shop fronts are all open to the street, and the goods are arranged on shelves or in drawers at the back. Generally speaking the shops are dull and uninviting, and often dingy and dirty. Looking along the street, the view is curious and interesting, but not beautiful. The shops and dwelling-houses are all low, mostly one-storied, none more than two. The sides of the large busy streets are lined with booths for the sale of old clothes, and with huts and stalls for the sale of everything. In other parts, bricks, stones, and timber are stacked, looking more like a building-yard than a street.

The streets present a lively scene. They are thronged from morning till night, and the amount of buying and selling is immense. The number of pedlars and itinerant jobbers is extraordinary. There are cooks with miniature restaurants on their shoulder, supplying hot luncheons for a farthing and dinners for a penny, sellers of fruit and flowers, cats' meat and muffin men, wood and charcoal vendors, tape and ribbon dealers, market gardeners, rag gatherers, scissors grinders, barbers, tinkers, and cracked-ware menders, *et hoc genus omne*. Each trade has its own cry or its peculiar rattle, and while the sun is up the din never ceases. Itinerant showmen, acrobats, conjurors, and story-tellers, are numerous. Blind musicians, singers or fortune tellers in companies or singly, feeling their way with sticks, are a sad but frequent sight, for blindness is a common calamity in China. Beggars abound. They are a dirty, diseased, gruesome lot; but bold and impudent, exacting tribute from every shop, and pestering every respectable passer-by. Long strings of camels laden with coal or lime, move slowly and sadly along, as if burdened with the sorrow of all the ages. Carts or springless cabs drawn by mules are the only means of conveyance, except donkeys, and every street is crowded with these heavy, slow-moving, uncomfortable vehicles. What a boon trams would be! How long, I wonder, before we get them?

The number of officials is alarming. Peking swarms with them. What they all do, I cannot imagine, unless it is to look after one another. But red-tapeism reigns in China, and the noble art of how not to do it is carried to perfection. China has comparatively few hereditary nobles; but they are nearly all in Peking, so we see a good deal of them. They live in great style, and when they appear in public, their yellow, green, or red sedan, is followed by a numerous mounted retinue, nearly choking humble pedestrians with the dust they make. The marriage or funeral, especially the funeral, of one of these grandees, or of a high official, is a very imposing sight. The procession takes two or three hours to pass any given point. In striking contrast with these grand funerals is the burial of little children. Every morning a buffalo cart, called the Lu-ti-tsz-hang, or Land-ship of Mercy, goes the round of each ward of the city. As it moves slowly along the great thoroughfares, persons from this court and that alley may be seen placing in it packages wrapped in straw or matting, or rough wooden boxes. Each package contains the body of a child that died during the previous night or afternoon. When the cart is full, or has completed its rounds, it goes out of the city gate and turns its sorrowful load into one common pit, and thus the little ones are buried. There is no funeral service, no mourners, and nothing to mark where the little ones lie. In China a child under ten is never buried in the family graveyard, but in some waste corner, or is thrown into the baby deadhouse which stands outside most Chinese cities, or in a common pit as in Peking. When a child dies it is supposed that an evil spirit, escaped from hell, has got into the child, but vengeance has followed and found it. Hence the child's death and strange burial. The idea is in painful contrast with the words of our Lord, "*Suffer the little children to come unto me, and forbid them not*; *for of such is the kingdom of heaven.*"

In the busy crowded streets, various races and nationalities are represented. Of course, Chinese form the bulk of the population. The business is nearly all in their hands. But comparatively few are natives of Peking. They come from all the eighteen provinces, and there is a perfect babel of dialects. But they do not regard Peking as their home, and seldom bring their families with them, and if they die, their bodies are carried back to be buried beside their fathers.

Next in point of numbers are the Manchus. They are the descendants of the great Manchu army, that conquered China and took Peking in 1644. They are divided into eight banners or regiments. All males receive a monthly allowance from the Government, and are liable to military service. They form an army reserve, and cost the Government, it is stated, £160,000 a month. They are very idle, very improvident, and usually very poor. They are hardly distinguishable from the Chinese, the dress being the same, and the physiognomy nearly alike. Very few of them can speak Manchu.

But Manchu women allow their feet to grow to the natural size, and enjoy much greater liberty than Chinese women. It is a striking illustration of the conservatism of the Chinese that, though their empresses and the highest ladies in the empire for more than 200 years have had natural-sized feet, they still cripple the feet of their women.

Hundreds of rough hardy Mongols, dressed in sheepskins, and mounted on ponies or camels, come to Peking in winter. Corean merchants and hawkers, in queer conical hats and white quilted gowns, are there in spring and autumn. Occasionally, too, we see a Thibetan, Nepaulese, Burman, or Tonquinese, come to lay tribute at the foot of the great Dragon Throne.

In two or three places there are stone slabs, in four Asiatic languages, commanding all to dismount from their horses and carriages, and walk humbly past the precincts of the Son of Heaven. Happily, this command is not now enforced. If it were, other slabs would be needed in the various languages of Europe; for nearly every Western nation has a legation there, and east and west meet in the streets of Peking.

The population of Peking is not so large as the size of the city and the crowded state of the principal streets would lead one to suppose. There are lots of waste land and vacant spaces within the walls. The imperial palace, the mansions of the princes and nobles, the numerous government offices, and large temples, occupy a considerable part of the city. The population is certainly not over a million—probably three-quarters of a million is nearer the actual number.

The state of education is very low. The great mass of the people can neither read nor write. There are no government schools, and as one master can only teach from ten to twenty boys, school fees are too high for the poor. The Chinese system of education also is so slow and laborious that it requires eight or ten years' hard grinding before a boy can read and write well enough to be of much practical value. The result is that only about 10 per cent of the male population of Peking have received an education. The women are not educated at all, or only a very few.

Concerning the moral condition of the people, it is hard for a foreigner, however long resident, to speak with certainty.

There is a good deal of outward decorum and order. The Chinese are old hands at whitewashing the outside of the sepulchre; but even a foreigner sees enough to show that the inside is full of corruption and dead men's bones.

The upper and wealthier classes are nearly all polygamists and generally opium smokers. Brothels, opium dens, and secret gambling hells are numerous. Street drunkenness is not common, though the consumption of native whisky is considerable. Property is fairly secure, provided the owner looks well after it; but everything not watched is stolen. The doctors' advertisements, which cover every blank wall, indicate a fearful amount of immorality and crime. Syphilis and abortion must be very common. That public opinion is not shocked by such scandalous advertisements is strong evidence of the corruption of the whole people.

Alongside of these advertisements are numerous yellow placards, which tell us something of the religious condition of the people. One set announces that "Lü Tsu (an ancient Taoist priest) is sure to answer sincere prayer;" another that "Prayer to Mrs. Wang (an old woman of the Mother Shipton class) is always efficacious." But the bills which outnumber all others bear the legend—

> "VENERABLE FAIRY FATHER (*i.e.*, the fox),
> Ask and it shall be given."

That is to say, prayer made to the fox will certainly be answered. Animal worship is rife in North China. Some sects worship almost exclusively the fox, snake, hedgehog, and weasel, calling them the "Four Immortals." Others add the rat, and call them the "Five Great Families." These animals are worshipped more or less by all classes. I have myself seen men, women, and children, just outside Peking, worshipping at a fox burrow. Religious degradation can go no further.

For the capital of a large empire Peking has few great buildings, monuments, or ancient relics of general interest; and those few are not very accessible. It is only by scaling walls and the use of substantial silver keys that we foreign barbarians can see any of them. Even the silver key will not open some locks.

The Altar of Heaven comes first, both in importance and interest. It stands in the southern part of the Chinese city, in a park-like enclosure, surrounded by three walls, the outermost of which is nearly three miles in circumference. The altar is built of white marble, and consists of a triple circular terrace, 210ft. wide at the base, 150ft. in the middle, and 90ft. at the top.* Each terrace is surrounded by marble balustrading and ascended by four flights of nine steps each. The surface of the altar is paved with white marble flags in nine concentric circles, the innermost circle consisting of 9 flags, the second of 18, the third of 27, and so on till the square of nine is reached in the outermost circle of 81 slabs. The centre stone is a circle. On this stone the Emperor kneels shortly before dawn on the morning of the winter solstice, and offers solemn worship and sacrifice to Heaven. A bullock without blemish is burned in a green porcelain furnace near the altar. A piece of blue jade, silk, corn, and other offerings are also presented. While the Emperor kneels, a prayer to Heaven is read, and then burned. He calls himself minister or servant, and acts as representative of the nation. There does not appear to be anything expiatory in the sacrifice. The sun and moon, the five elements, and deceased ancestors are associated with heaven in this highest worship of China, and offerings of cloth, a bullock, a sheep, and a pig are presented to them. This great ceremonial represents a worship which goes back to the earliest times, and is a relic of the ancient monotheism of China, but long since corrupted by mixture with nature worship. Heaven has been deified and God confounded with the powers of nature. Possibly some of the old glory lingers, and the idea of a personal God has not been wholly lost.

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* Throughout the altar most numbers are three or multiples of three. The balustrades of the three terraces are 72, 108, and 180 respectively. So also in the pavements of the two lower terraces and the steps.

Within the same enclosure, but a little to the north, is another beautiful round marble structure, with triple terraces and surrounding balustrades, just like the great Altar of Heaven, only not quite so large. It is surmounted by a noble temple 99 feet high, having a triple roof of blue tiles like heaven's azure. In this temple prayer and sacrifice are offered in early spring for a propitious year. It is called the Chi nien tien, or Hall of Prayer for a Propitious Year.

Corresponding with this Altar of Heaven in the southern suburb there is a square flat Altar of Earth in the northern suburb, where the emperor worships on the morning of the summer solstice. In the eastern suburb there is an Altar to the Sun, where state worship is offered on the 8th of the 2nd moon, and in the western suburb an Altar to the Moon, where a representative of the emperor, rarely the emperor himself, worships on the 15th of the 8th moon, the evening of the full harvest moon. Thus, on the four sides of Peking we have Chinese nature worship brought very vividly before us. Each of these altars is situated in a large walled enclosure.

On the east wall of the Tartar city, not far from the south-east corner, is an astronomical observatory. It is built against the wall, and rises a few feet above it. It is the oldest observatory in the world, 400 years older than the oldest in Europe. It was established by Kublai, about the year 1279. The old instruments of Kublai have been removed from the terrace and placed below in the front court. These consist of an equatorial armillary, an astrolabe, and an altitude and azimuth instrument. They are in bronze and beautifully ornamented, each being borne in the mouth and claws of four richly-carved dragons. As castings they are marvels of beautiful workmanship, and as astronomical instruments they are the best of their time. But they are now antiquated and useless, and must always have been difficult to handle. The circle is divided into 365¼° after the length of the year. The instruments which have taken the place of these old ones upon the terrace were made under the direction of Verbiest, the famous Jesuit missionary, about 1674, and were evidently modelled after Tycho Brahe's instruments. The altitude and azimuth instrument differs from the others in having the degrees marked in foreign numbers, and is said to have been a present from Louis XIV. to the emperor of China. These instruments are all exposed on an open terrace. In one of the side rooms in the front court there is a large water clock, used to mark time during eclipses.

Close to the observatory is the great Examination Hall, or Yard as the Chinese very properly call it. It consists of a walled enclosure, in the centre of which stands the examiners' rooms, surmounted by a watch-tower commanding a view of the entire enclosure. On each side are several thousand cells, arranged in long rows one behind the other. These cells are very small and very rough, and look just like sentry boxes placed close together in rows. Here examinations for the degree of Master of Arts and Doctor of Literature are held every three years. At the last M.A. examination 17,000 graduates competed for 380 degrees; at the last D.L. examination 8,000 competed for about 180 degrees. This is the highest degree, and can only be conferred in the capital. It is open to all Masters of Arts throughout the empire.

Peking is well supplied with Buddhist and Taoist temples and monasteries. There is hardly a street without one or more. Some of these are large, and look very imposing with their yellow or green tiled roofs.

In the north-eastern part of the city, close to the north wall, the Mongols have a very large lamasery, called the Yung-ho-kung, with 1,500 resident lamas. This building was the palace of the Emperor Yung-cheng before he came to the throne. The bath of his son and successor, Chien-lung, is still shown in the great hall. In the principal court is a square marble monument recording in Chinese, Manchu, Thibetan, and Mongol, the history of Lamaism. In the same court are maps of the universe, accord-to lama notions, and pictures of the six paths to Nirvana. In the great central hall the lamas assemble daily (twice a day, I think), to chant the Buddhist liturgy. This they do squatting in rows before long low benches, their missals open before them.

In the north or hindermost court is a lofty building containing a gigantic sandal-wood image of Maitreya, or the Coming Buddha, 75ft. high and 30ft. broad. It is a standing figure, and two flights of stairs only reach to the waist. A little to the north is a huge praying wheel, the same height as the image, which is set in motion when the emperor visits the temple. There are several small praying wheels or cylinders in the courts fitted with handles ready for people to twirl as they pass.

This building is a good specimen of the best Chinese architecture. The establishment is ruled by a Gegen, or sort of living Buddha, who is usually a Thibetan.

A little to the west of this lamasary is the Confucian Temple, or Temple of Literature. The courts are planted with double rows of venerable cypresses, some of which go back to the time of the Mongol dynasty of 500 years ago. The chief hall is a lofty building, between 40ft. and 50ft. high, supported by strong teak pillars. A shrine containing the tablet of Confucius occupies the central position. The inscription on the tablet is, "Shrine of the most holy ancient teacher, Confucius." Above the shrine is a tablet, with the inscription, "The teacher and exemplar of a myriad ages." There are other tablets, the gifts of various emperors, all lauding Confucius. The shrines of four distinguished disciples and followers are placed two on each side of the shrine of Confucius, and then a little lower down twelve more, six on either side—in all sixteen who are considered worthy to bear the great sage company. In the middle of the court, in front of this hall, are six marble monuments, borne on the backs of marble tortoises, each under a yellow tiled roof, recording six conquests by the emperors Kang-hi, Yung-cheng, and Chien-lung (1604-1777). On either side of the court is a range of low buildings containing the tablets of over a hundred famous followers of the sage, more than half being his immediate disciples. In the gateway of this court are ten drum-shaped granite stones, supposed to be 2,500 years old. They bear a poetical inscription commemorating Hsüan Wang's hunting expedition, but as they are not mentioned before the seventh century of our era their antiquity has been disputed. In the outer court are rows of upright stone slabs looking very like gravestones, but a closer inspection shows that they record the names and residences of all who have attained the degree of Doctor of Literature. The three oldest slabs belong to the Mongol dynasty. The record therefore covers 500 years. No Buddhist, or Taoist, or other heretic, however celebrated, has any place in this temple of Confucian learning.

Alongside of the Confucian temple stands the Kuo Tsz Chien, or Board of National Preceptors. It is also called the Hall of the Classics. In the broad cloisters on both sides of the court are 200 stone slabs, on which the entire Confucian classics are engraved. In the centre of the court is a square building, in which the emperor is supposed periodically to explain the classics. It has long been unused, and the floor is deep in dust. The building is surrounded by a marble-faced moat, and in front there is a beautiful marble and porcelain arch.

A short distance outside the An-ting Men, or north gate, is a large lama monastery, called the Huang-sz. In the west court of the monastery is a dagoba-shaped marble cenotaph, erected by the Emperor Chien-lung to the memory of a high lama. He held the rank of Banjan, which is next to the Dalai Lama, or Pope of Thibet. The emperor invited him to Peking, and while there he died of smallpox. His body was taken back to Thibet, but his clothes were buried under this beautiful white marble monument. On its eight sides are engraved supposed scenes from the lama's life: his birth, entry to the priesthood, conflicts with spiritual foes, instruction of pupils, sickness and death, over which men and beasts weep. Every Mongol who comes to Peking worships at this shrine.

About midway between the north wall of the Tartar city and the north gate of the Imperial city is the Bell Tower. In this tower is a huge bell, one of five made by the Emperor Yunglo (1723-35). It weighs 120,000 pounds, is 14ft high, 24ft round at the rim, and 9in. thick. It is struck at midnight, to mark time for the city watch. There is a touching legend connected with this bell. Two attempts to cast the bell had failed. The emperor was enraged, and threatened Kuan-yiu, the officer in charge, with death if he failed again. Kuan-yiu's beautiful daughter, Ko-ai, heard the sad news, and went to an astrologer to learn the fate of the next casting, and was told that it also would fail, unless a virgin's blood was mixed with the ingredients. Ko-ai begged permission to see the next casting. The fateful moment came; the seething metal poured out in a great liquid stream. Ko-ai stepped forward, and crying, "For my father," threw herself headlong into the molten stream. One of the spectators rushed forward to seize her, but was only in time to catch one of her shoes, which came off in his hand. The horror-stricken father would have followed, but was held by strong hands, and then led away a raving maniac. The casting was a complete success, the bell was perfect, but no vestige of Ko-ai could be seen—only, whenever the bell is struck, there is a cry as of a female voice, saying "*Hsie, hsie!*" (Shoe, shoe!) It is Ko-ai calling for her lost shoe.

Another of these magnificent bells is in the Great Bell Temple, about two miles north-west of the city. It is covered inside and out with Chinese characters, being extracts from the Buddhist classics. It is a perfect piece of work. Every character is as clear as if it had been cut with a die.

A little way to the south of the Bell Tower is the Drum Tower.

This tower was built in the latter half of the thirteenth century by Kublai. It contains a big drum, on which the hours of the watch are supposed to be struck throughout the night. Time is measured, when measured at all, by sticks of burning incense, after the fashion of Alfred and his candles.

In the western part of the city, just west of the Four Arches, is a large yellow-tiled building called the Ti-wang-miao, or temple of emperors and kings. In this temple are tablets to all the good sovereigns, from ancient times to the present. Usurpers, tyrants, those who have been assassinated, and those who have lost their thrones, are excluded. The long array of tablets, going back more than 4,000 years, powerfully reminds us of China's long past. Here sacrifices are periodically offered to the manes of China's long-vanished but not forgotten sovereigns.

A short distance west of this temple is a large lama monastery, called the Pai-ta-sz, founded 700 years ago during the rule of the Chitan Tartars. It has a fine white dagoba, under which are buried twenty beads, 2,000 clay pagodas, and five books of Buddhist charms. The Mongol Emperor Kublai spent large sums on the embellishment of this monastery and its idols. It is one of the sacred spots of Mongol pilgrimage.

This monastery is near the Ping-tseh Men, one of the west gates. Passing out through that gate, and keeping a little to the right, we come to the old Roman Catholic cemetery, where Ricci, Schaal, Verbiest, and other great missionaries, lie buried. Ricci's is the oldest grave. He died in 1610, in the time of the Ming Emperor Wanli. It is a spot full of sacred and inspiring memories, even for those who do not approve all that those able and devoted men did and taught.

The Roman Catholics have three large churches in Peking, and one or two small ones. They have a considerable number of converts in and around the capital, mostly the descendants of those who embraced Christianity 200 years ago, when the Jesuits were in favour at court.

The Six Boards which constitute the Central Executive of the Empire are situated on both sides of the southern entrance to the Imperial Palace, the Boards of Office, Ceremony, Works, Revenue, and War being on the east side, and the Board of Punishment on the west. They are in a very dilapidated, dirty condition, and are always under water after heavy rain. It is the habit of the Chinese to put up noble public buildings, and then let them gradually fall to pieces. They are never repaired till they threaten to fall down. It is no unusual sight to see shrubs growing out of the roofs and walls of their finest buildings. There is a general lack of paint, while the reign of dirt is universal.

Situated on the fortieth parallel of latitude (39° 54′ 36″) Peking should enjoy a mild and equable climate. But climate depends on other things besides latitude. Standing at the head of a great plain, nearly 700 miles long and over 300 miles broad, Peking is decidedly hot in summer, the thermometer sometimes registering 108° Fah. in the shade, though this great heat does not last long. In winter the thermometer falls below zero. Navigation closes towards the end of November, and reopens at the beginning of March. The ice is from 18in. to 2ft. thick. All who can afford it dress in sheepskins or furs. This intense cold is due to the prevalence of north-west winds from the Mongolian plateaus, and to the rapid radiation of heat owing to the dryness of the atmosphere. The transition from summer to winter and from winter to summer is gradual. Spring would be pleasant but for the frequent dust storms; but autumn is thoroughly enjoyable.

The climate is very dry, owing mainly to the prevalence of north-west winds. The fall of snow in winter is seldom more than two or three inches, and frequently there is none at all. Rain is very uncertain. Months pass without a shower. But, happily, the south-east monsoon usually brings thick clouds and heavy rains in July and August.

The dryness and the wind produce a succession of dust-storms all through the winter and spring. The wind catches up the dust and drives it along in blinding eddies, or in unbroken cloud-masses, shutting out the sun and darkening the whole sky.

Long after we had opened trade and made a treaty with China, Peking was closed to us—not even our ambassadors might reside there. It was the city of the "Great King," and all who entered must enter as subjects, vassals, or tributaries. But in 1860 the allied English and French troops, after burning the Summer Palace, entered Peking, and in 1861 the British Minister took up his residence there.

The same year Dr. Lockhart and the Rev. J. Edkins, D.D., of the London Missionary Society, opened an hospital and mission in Peking. Other societies soon followed, and now there are three American societies and two English working in Peking. By means of hospitals, schools, books, and daily public preaching, a successful work is being done. In the city itself there are from 800 to 1,000 Church members, and in the country around as many more. A knowledge of the leading truths of Christianity and the common facts of modern science is gradually being diffused among all classes, and a period of change and progress is being inaugurated.

The only outward and visible sign of modern life and improvement in Peking is the telegraph wire. In this one respect Peking has abandoned its proud isolation and put itself in touch with the rest of the world. How long will it be, I wonder, before the railway-whistle will echo along her old palaces and the rush of the steam engine disturb the slumber of centuries? Perhaps sooner than we expect. The snort of the "iron horse" is now a familiar sound at Tientsin, only eighty miles away, and may soon be heard in Peking. Among China's statesmen a comparatively liberal and progressive spirit prevails, and we may anticipate great progress in the near future. Our trade with China is already immense, but when China has railways that trade should be doubled and trebled. Quick communication will also greatly strengthen the central government, and bring the whole empire in close touch with Peking.

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EXPLANATIONS OF MAP OF PEKING.

Peking consists of two cities—the inner or Tartar City, and the outer or Chinese City—divided by a common wall. Together they are twenty-three miles in circuit. Population is about three-quarters of a million.

The Tartar City was built by the Mongol Emperor Kublai Khan, in A.D. 1267, and reconstructed by the Ming Emperor Yung-lo in 1409. It consists of three nearly concentric walled squares—the Tartar City, the Imperial City, and the Purple Forbidden City or Imperial Palace.

The walls of the Tartar City are 45½ft. high, 47¼ft. broad at the top, and are nearly fourteen miles in circuit. It has nine gates, each protected on the outside by a semicircular wall or *enceiente*, and surmounted by a lofty tower over 100ft. high, bristling with gunholes. A similar tower stands on each of the four corners of the city. The principal streets are wide, and run the entire length of the city. From these the smaller streets branch off at right angles. The principal buildings are the

Observatory, Examination Hall, Great Lamasery, Confucian Temple, Bell and Drum Towers, Temple of Deceased Emperors and Princes, Pai-ta-zs or White Dagoba, and the Six Boards. In the suburbs, north, are the Altar of Earth and Yellow Temple; east, Altar of the Sun; west, Altar of the Moon.

The Imperial City is a walled enclosure, nearly in the centre of the Tartar City, six miles in circumference. It is intended as a protection to the Palace.

The Purple Forbidden City, or Imperial Palace, occupies the centre of the Tartar and Imperial Cities, the main entrance projecting southwards. The palace is surrounded by a high wall, and a deep broad moat over two miles in circumference. The pleasure grounds and lakes are to the north and west.

The outer or Chinese City adjoins the Tartar City on the south side, and overlaps it on the east and west. It is a parallelogram, about five miles long by two broad, and was built by the Ming Emperor Chia-ching, in A.D. 1543. The walls are about 22ft. high, 15ft. broad at the top, and 9½ miles long. Much of the city is waste land. Streets are mostly narrow. Chief buildings are the Altar of Heaven and the Altar of Agriculture. The western portion stands on the site of several ancient cities—Yiu-chou, A.D. 500; Yen-ching, A.D. 936; and Chung-tu, A.D. 1125.

English Ship Canals.—PROPOSED WATERWAY BETWEEN BIRMINGHAM AND THE HUMBER.—A project of immense importance to the Midlands is being quietly but resolutely prepared by a few enterprising commercial men, and will in all probability be introduced into Parliament in the shape of a bill during next session. We allude to the Tame Valley and Trent Navigation Scheme, the object of which is to connect Birmingham with the river Trent by means of a short canal, and thus secure for steam propelled barges cheap and ready access to the German Ocean. All the details of the scheme have not yet transpired, but some of its leading features may be broadly stated. The canal which is to connect Birmingham with the river Trent is to be 80 feet wide, and the river is to be dredged and widened to the point at which the Lower Trent navigation commences. From Wilden Ferry there is a stretch of the Trent, twenty miles in length, over which the Marquis of Anglesey has "the navigation rights with toll-free access to the German Ocean," and these rights have, it is stated, been virtually acquired by the promoters of the enterprise. The navigation of the Lower Trent right to the Humber, and the absence of toll-dues (goods being transferred from the barges to the ships' holds in the open Humber mouth) present advantages of so great and so substantial a character that they cannot well be exaggerated. It appears that no engineering difficulties of serious magnitude threaten the new and bold project. Between Water Orton and Posthill there must be a deepening and widening of the river's bed, and certain bends in the river will have to be cut away, old-fashioned bridges with massive stone piers will have to give place to girder bridges of considerable span, and in some places huge embankments of concrete will be required to minimise the effects of floods. The Warwick Canal Company, which has a network of waterways in the vicinity of Birmingham, promises generous co-operation, and no difficulty will be presented by the Drainage Board of that town, through whose sewage farm a short canal will have to be made en route to the terminus, which will be a lock of 100 boats' capacity on property now belonging to the Corporation at Nechells. The scheme, as foreshadowed, will give Birmingham a waterway 7 feet to 9 feet deep and 80 feet wide to the North Sea with barge trains computed to carry 400 tons per steam tug. It is estimated that merchandise can thus be conveyed from Birmingham to the estuary—170 miles—in 24 hours at an average cost of 8s. per ton, thus effecting an enormous saving on the excessive rates now charged by the railways. Some idea of the economy to be effected may be gleamed from the fact that one Staffordshire town on the route—Burton-on-Trent—calculates on a saving of £100,000 a year. A good deal of opposition to the scheme is sure to be raised on behalf of the railway companies, but the interests of a total population of three and a-half millions ought to weigh well with the Legislature in considering a scheme which is of such paramount importance to the industrial life of Birmingham and the Midlands. We shall await with interest fuller particulars of the projected new waterway.—*Staffordshire Advertiser.*

FERNANDO PO, WEST AFRICA.

By the Rev. THEOPHILUS PARR, M.A.

[Addressed to the Members in the Memorial Hall, February 6th, 1889.)

FERNANDO PO is an island lying off the West Coast of Africa, in the Gulf of Guinea, situated between latitude 3° and 4° N. and longitude 8° and 9° E. Speaking roughly, it is about 120 miles in circumference, measuring from north (Point Bullen) to south (Melville Bay) 35 miles; from west (Point Bullen) to east (Cape Horatio) 25 miles. From the deck of the steamer making its way down the coast Fernando Po is seen at a long distance. It is an island consisting of a high mountain ridge, the highest peak of which is over 11,000ft. above sea level. On the continent immediately opposite is the twin mountain of the Cameroons, whose summit is still higher, over 13,000ft. It does not require much poetic imagination to see in these two mountains the great pillars of the gate to the southern seas. Approaching nearer, one is struck by the uniform dull colour of the land of the mountain sides, and closer inspection shows it to be covered with forest from the sea-beach to within a very short distance of the summit of the mountain. The shape of some of the mountain peaks and the black rocks that line the coast speak of volcanic influence. In my travels over the island I found several craters of extinct volcanoes. Some of the old people are quite positive in their assertions that some years ago they saw fire and smoke coming from the summit of the twin mountain of the Cameroons. Travelling about the island is difficult, insomuch as there are no roads save the narrow winding paths made by the natives through the dense jungle. There are deep chasms to be crossed. These chasms invariably run in a line downward to the coast. The traveller has to descend one side, and, crossing the mountain stream that runs along the bottom, climb the other. Fortunately there are small trees and brushwood growing on the sides which give a hold, but one soon feels that boots are at this point only an encumbrance, and that the native, who can hold on by his toes as well as his fingers, has a decided advantage. The soil is mainly a dark vegetable loam, with here and there a bed of clay. Sinking a well for water at the bottom of one of the valleys in the George's Bay district, I passed through, perhaps, 8ft. of this rich dark soil, then 5ft. or 6ft. of clay with a little gravel, and then came to the hard volcanic rock. The clay in many places seems admirably suited for building purposes. One of our missionaries, indeed, made bricks with it, with which he built an outhouse, which has stood the weather for some eleven or twelve years. Running along the shore one can detect patches of lighter green colour varying the scenery of the mountain side. These are the yam plantations made by the natives, the yams being their principal food. The yams of the North-west Bay district have a great reputation on the coast for sweetness and delicacy of flavour. Near the beach we can see the palm trees of various sorts, cocoa-nut palms, oil-palms, &c., bananas and plantains, orange trees, and others. We have found in the woods lignum vitæ, the indiarubber tree, satinwood, mahogany, and other hardwood trees. At Santa Isabel and North-west Bay there are flourishing plantations of cocoa, and the export of this product is increasing year by year. Tobacco, coffee, and cotton have also been grown; but I cannot speak very favourably of Fernando Po cigars—they seemed very nice cigars "to give away," while as to the cotton, I am not aware that its quality has ever been tested by spinning. The principal export is palm oil, some thousands of tons being sent to England every year. The most cursory glance will show that the resources of the island are yet to be developed, and the production of such things as palm oil and cocoa, to say nothing of tobacco, cotton, and coffee, could be increased a hundred-fold. The fertility of the soil may be judged by the fact that after cutting down the brushwood and high cane grass round a hut, which I used as a lodging place in one of the villages, in the interval of three months which elapsed before I could visit the place again, the grass had grown 5ft. high. The climate is, of course, tropical, having a rainy season from April to August, and a dry season from September to March. As a place of residence it has been called the Madeira of West Africa. It certainly is more healthy than the delta of the rivers on the continent, being an island and mountainous. One may, by ascending, find a temperature low enough for comfort, while the sea breezes are fresh and invigorating. The European residents are subject to the coast fevers, and occasionally there has been an epidemic of yellow fever. A vast improvement could be made at little cost by the draining of the comparatively small areas of swamp and marsh that are to be found in various parts.

Landing at the chief port, Santa Isabel, the visitor is struck by the absence of beasts of burden and vehicles. The streets are grown over with grass. There are a few half-wild bullocks careering in the bush near the town, and a few stray pigs may be seen; but horses and cattle cannot be kept in vigorous health. In the forest are monkeys, squirrels, antelopes, porcupines, snakes of every description (which by their abundance amply compensate for the absence of beasts of prey), and birds of gorgeous plumage. The sea teams with fish, and at the season of the year the whales visit the coasts, also turtles.

Santa Isabel has a heterogeneous population. There are the missionaries of the Primitive Methodist Church, Jesuits of the Roman Catholic Church, the officials of the Spanish Government, two or three English and Scotch merchants, a few Portuguese, and occasionally a batch of Spanish convicts. These make up the European population, which forms, perhaps, one-tenth of the whole. The coloured people of the town are of various West African tribes: they are the descendants of recaptured slaves. The island was discovered in 1471 by a Portuguese named Fernandez. It was ceded to Spain by a treaty signed in 1778. An expedition sent immediately afterwards, partly to colonise and partly to secure slaves for the working of the Spanish plantations in South America, miserably failed. Of the 150 who set out, only 22 survivors returned to Monte Video. The aborigines of the island could not be caught. It was useless attempting to hunt them in the forests. It would be easier to catch and train the monkeys. Like other mountain tribes, they are independent in spirit. As a consequence of this failure, the island was abandoned by the Spaniards till the year 1843. During this time the island was often visited by British ships, which called for fresh water and a supply of yams and fruit. A settlement was made by Captain Owen, of the British ship Eden. The town now called Santa Isabel was laid out and called Clarence. To this town were brought several shiploads of slaves who had been recaptured by the British men-of-war. A Spanish expedition came in 1843 to reclaim the island. An English gentleman named Beecroft was made governor, and received an appointment also as British consul. Not a single Spaniard resided at the island till 1856, when a number of Jesuit missionaries came. No wonder, therefore, that a number of these coloured people resolutely insist that they are English subjects. You may meet in the streets a gentleman, with a skin as black as your boots, and, asking him "What countryman are you?" may receive the answer, "I be Inglis man, sah." For reasons which, perhaps, we need not here enter upon, many of these people have a preference for the British Government, though in the town itself they might hesitate openly to avow it. Beecroft was succeeded in the governorship by Lynslagen, a Dutchman, so that the advent of Spanish governors and officials is of very recent date.

These coloured people of the town, belonging perhaps originally to some twelve or thirteen different African tribes, make a broken English their common meeting ground of language. They are the merchants of the island, acting as the intermediaries between the British houses and the aborigines who gather the nuts and make the oil. A few of them of late have begun to trade direct with Manchester houses, and one of these men has at North-West Bay a cocoa plantation and trading station which is one of the finest in West Africa.

The aborigines of the island are called Bubis. The native word for man is Buyé and possibly, some Jack Tar hearing the word thought Bubi was near enough. There are none of them living on the coast anywhere round the island. They say they catch fever if they sleep near the beach, and I have known several cases of severe and long-continued fever occasioned by this which amply justified their statement. Their appearance is certainly not prepossessing. They have a fashion of daubing their bodies all over with finely-tempered clay, mixed with the juice of a plant that makes it red. One never sees the real colour of their skin unless they should have been out for two or three hours in a heavy rain. The tribal marks on the face are parallel lines cut in the cheeks and forehead. With the same mixture of clay they sometimes plaster the head, so that if the direct rays of the sun cause sunstroke, one ceases to wonder that they never suffer from it. Respecting their habits and customs I cannot on every point speak with absolute certainty. I was not there quite three years. Had I been on a visit of three weeks I should doubtless have been able to collect a vast amount of most valuable information (?) When a man has been with this people a few days he is apt to think he knows everything about them but after a residence of nearly three years I had reached that stage when one feels it necessary to have a personal experience of another twenty years before venturing to speak with assurance. The tribal marks on the face are the same as those of the Okoos of the Yoruba country up the Niger river, but I could not discover any tradition amongst them of any migration in generations gone by. In fact, none of those with whom I came in contact seemed to have any idea of any world beyond their own island. The white men came from somewhere over the sea, but it could not be compared with their own territory. The cloud-looking Cameroons mountain, that can be seen on a clear day, was simply "yonder." I have been in villages where it was difficult to persuade the people that I was not a demon from the spirit world. In other places, however, it was of the utmost importance that I should explain to them that I was an Englishman and not a Spaniard, for they seem to preserve a very vivid recollection of the attempt to capture slaves made over a hundred years ago.

Their religious system, of course, is the usual Fetichism. I found great difficulty in obtaining accurate information as to their real beliefs. They manifested great unwillingness to speak to a foreigner on such matters. They are not quite sure what mysterious power a white man may have over the spirits, and hence are prudently cautious in not letting him know too much. And we can also understand how difficult it will be for many of them to give any explanation of their religious ideas. Not a few intelligent and educated Englishmen find the same difficulty. That they have faith in a number of spirits, and seek to propitiate these spirits by sacrifices and charms, is evident. You see the necklaces of bits of bones and feathers on the people. The entrance to the village is an archway formed by two boughs bent together and the skull of a goat in the centre. Before every hut is a short post, on the top of which is a bowl of water in which lie bones and nuts. You pass near the beach, at the side of the path, a heap of sticks and stones to which every native makes a contribution on his journey to the trading station as a propitiatory offering for prosperity. In some quiet spot in the forest you may come upon the ashes of the fire, the bones, and the remains of the victims offered in sacrifice, and the post to which the string is yet hanging that bound the victim. They have very definite ideas about inspiration. You hear a man making an unusual grunting noise, and are told that it is not indigestion, as you might reasonably suppose, but the "spirit" within him. You may meet a procession, at the head of which a woman is marching who utters the same sounds. Her body, daubed with the usual red clay, is further decorated by lines of yellow clay marked in the lines of the main bones of the body, so that she looks like a walking skeleton picture. On her head she carries the skull of a goat or sheep. They have the customary African superstition about the evil eye and the evil breath of witchery. On festal occasions each frequenter puts on a big belt of goatskin, which, on his attaining puberty, was given him by the priest as a sort of pledge of loyalty to the local deities. Superstition dies hard. It is not unusual for one of the civilised educated coloured people of the town to go to one of these Bubi priests for information concerning lost property, or to inflict vengeance for some wrong. They have their religious ceremonies—a dance, called the Bwalla, is partly military and partly religious. You may find a village deserted by its men and boys, and be informed as an explanation, that they have gone to make a great bwalla—that is, to organise a grand hunt in the forest for game, and then offer the slain animals in sacrifice, roast them, and eat them. Of their ideas of the future state I know but little, for even the converted natives seemed to dislike speaking of it. They speak of the world of spirits, and that is about all you can learn.

In social life polygamy prevails. One woman, however, is held as chief wife. The chief of the district where my mission was situated derived his authority from his chief wife, who was the daughter of the former chief. A wealthy man will have a harem of women of all ages, down to the almost baby, who, having been weaned from its mother, has been secured and is growing up with his own family. These are obtained by negotiations with the parents and the bestowment of a gift as a recompense to them for the loss of her services. The present necessary to obtain a wife varies according to the physical abilities of the lady concerned and the social position of the parties contracting. A pound or two of tobacco or a small seven-pound keg of powder would be sufficient in some cases, while for another perhaps two or three pounds worth of goods would be demanded. When the price has been paid, she is looked upon as the property of her lord and master. In estimating his wealth a "gentleman" will say he has so many goats and sheep and women. If a man dies the women or girls, as it may be, of his harem, cannot be married to any other person, but are, after the period of mourning, sent out on the community to live the life of shame, half of the proceeds of the traffic going to the family of the girl and the other half to the chief of the district. It is impossible before a mixed audience to describe the evils of this horrible system that pander to the basest passions of human nature. With all this we had great difficulty in persuading the girls, who had been taught in our school, that they would each be happier as the single wife of one man. Their argument was reasonable enough. The women have most of the work to do. If there is only one she would have to work too hard, besides which she will have to bear the brunt of all the master's anger when he is vexed. Human nature, however crushed and degraded, is much the same there as everywhere. As we became familiar with the families of the district it was evident to us that there was the same difficulties in persuading a number of these poor women to live in harmony and peace as would arise by a similar experiment with ladies of any other nation. The "master" found that "the power of the stick" was sometimes necessary as a last resort. In seeking to save them from this evil we had to face the difficulty often suggested by the head of the house. "If I give up all my wives but one, what will become of them? The law will still hold me responsible for them; and then further, if I am but to keep one, which shall it be?"

Our great hope was in the training of the young, and in this particular we were gratified by success. We considered that the first Christian marriage was as great a victory as the first baptised convert from Fetichism.

These Bubis are, as a tribe, exceedingly low in the scale of humanity—in many particulars greatly below the level of the tribes on the coast opposite. The poorer dwellings, the absence of any reasonable method of medicine, the lack of ambition for fine appearance, marked their inferiority. Yet it was interesting to note their progress. As a people we did not think them so quarrelsome and cruel as some tribes on the coast. We never considered it necessary to carry weapons of defence, and in our journeyings have, night after night, slept peacefully on the ground of their huts. We never had any trouble with any of them, only on those occasions when some "gentleman" had been partaking too freely of the white trader's rum, and came on the mission grounds to show it. A missionary in his life must play many parts, and occasionally we have had to be policeman, judge, jury, and executioner in a short half minute.

While there, a quarrel broke out between the people in two districts of the north-west of the island. A chief, wishing to obtain the most powerful charm possible, had negotiated with a man near whose hut the bones of an executed murderer were buried. These bones were taken up and removed to the hut of the chief, whereat the people of the district to which the man had belonged raised an alarm and threatened war if the bones were not returned. Their "wars" were never signalised by any open battle of numbers, but each warrior proceeds independently, trying to steal upon and kill some of his enemies, while watching not to be caught himself. And thus this practice of wholesale assassination in times past had gone on for years. Fortunately, on this occasion, the head king of the island intervened—sent a deputation down to investigate—a council of the chiefs of the neighbouring district was called to assist in the adjudication—the bones were brought back—the man who sold them was fined all his goats, and sheep, and yams, which fine was forthwith exacted, cooked, and eaten by the assembled jurymen—and all were satisfied. We were glad to have the matter settled so peaceably.

It is impossible to estimate the number of the aboriginal population, and so we cannot say whether it is increasing or decreasing. It is notorious that the people nearest the town, where the rum is so accessible, are the most degraded. There is as much physical difference between the Bubi of the town district and the Bubis who live in the south as between the brawny Scotch Highlandman and an undersized factory operative of Lancashire. We found the children quick to learn in the schools, and the men ready-witted and intelligent on matters within their knowledge. Some of the imbecilities of the so-called nigger witticisms given in this country would be as much beneath the intelligence of the average Bubi as it is beneath the average English working man. They have been called by some who have known them the laziest people in creation, but it must be remembered that hitherto they have had no motive for work. The banana grows spontaneously. The yams only require a very little labour during two months of the year. The Bubi's house can be built in a day out of materials close at hand in the forest. If you speak about clothes, he will pertinently ask, "Of what use are they? I am warm enough without them." As to decency, he sees no more harm in his people being without garments than in the goats and sheep being unclothed. What can you offer him, therefore, to induce him to work? He only requires of the white man a gun and ammunition to kill the game when he goes hunting, and a knife to carry in the sheath on his arm. As to the rum, which forms so large a part of the goods which the merchant gives in exchange for the country produce, it seems a degradation of the term to call the traffic by the name of "trade." Wherever it is obtained by the natives its use tends inevitably to their demoralisation and destruction. In all our journeyings amongst the people we never saw a native drunk with the palm wine of his own country. In every case the drunkenness was the result of "trading with the white man." We were so impressed with the evils of this traffic that, much as we felt our loneliness, and thoroughly gentlemanly as might be the personal character of the white merchant, we often were led to wish that the natives had never known the English trader. Rum dealing is not trade: it is money on the one side and destruction on the other.

On this line of commercial interests we think we can make out a good case for mission work, It was interesting to note, as the people were gradually won to attend the mission services, how the demand for Manchester prints and calicoes increased. We did not preach that man should be clothed; but as they heard the Gospel, somehow these men felt that they must be clothed, and thus the demand was created. To obtain these articles of clothing and household furniture our native converts have cleared the ground and made large cocoa plantations. They have each year sown a larger area with yams, and have been the first of their countrymen to engage in the fishing trade.

We found the chiefs and people quick to appreciate the importance of the education of their children, especially in view of their trading with the white men. To the West Coast native the English language is the language of literature, commerce, and political power. Men who had not the remotest intention of becoming Christians themselves, or of allowing their children to do so, were anxious that their children should attend our schools and become learned in the "white man's wisdom."

Having no books to assist us, our work of learning the language was a groping in the dark for a long time, and we were conscious of many imperfections in our speaking even to the last. The most prominent characteristic is the principle of "alliteral concord." "An assimilation which takes place between the initial letters of words grammatically connected in a sentence, the word governed generally changing its initial into that of the word by which it is governed."

We found the young men of the mission quicker to learn our language than we were to learn theirs; and in the course of ten years' labour have succeeded in training some twenty or more of them who can now read and understand their English Bible and act as interpreters.

After having somewhat mastered the language of the people of the North-west district, we found ourselves unable easily to converse with the people of other districts—the dialects differing as widely as the dialects of broad Yorkshire and Somersetshire.

Like all other missionaries we found a little medical knowledge of immense value. Being a day's boat voyage from civilisation, or more if the weather was bad, we were compelled to practise medicine both for ourselves and the poor people round us, and, if need be, could secure a large number of testimonials of the benefit received by our simple treatment, the most satisfactory to us being the transformed character of some who, having received benefit by the medicine for the body, were thereby won to bear and receive the hopeful message for their souls.

It is certain that with the work which might be done by an enterprising and vigorous government in the making of roads, construction of harbours, drainage of marshes, &c., together with the efforts of legitimate commerce, and, may I not add, the strenuous labours of a practical Christianity, Fernando Po may become the gem of West Africa.

Winter Travel at Davos.—I cannot do better than continue these observations with some account of my personal experiences upon the mountain roads. With this object in view, it will be well to describe the mode of travelling in use here. The snow-tracks which cross the higher passes are very narrow; and for this reason, little low open sledges drawn by one horse are commonly employed. The sledge is a box, shaped somewhat like a car in a merry-go-round, into which a pair of travellers are shut by means of a wooden frame or lid moving up and down on hinges. This lid rises to the breast of a seated person, and protects his legs from falling snow. The upper part of his body is exposed. When the sledge upsets, which is not unfrequently the case, the whole falls quietly on one side, and discharges its contents. The wooden frame or lid, being movable upon its hinges, enables a man to disengage himself without difficulty. The driver stands upon a ledge behind, passing the reins between the shoulders of the passengers. There are no springs to the vehicle, which bumps and thumps solidly in the troughs of the road, dispelling all illusions as to the facile motion of a sledge. If it is needful to pass another vehicle, the horse plunges up to his belly in soft snow upon one side, then struggles furiously, gains his feet, and lifts the sledge with quick spasmodic effort to the beaten track again. These sledges carry no luggage. A second horse is used, which follows close behind, and draws a truck on runners laden with all kinds of baggage. He has no driver; and the result is that these luggage sledges frequently upset. It is always safest to travel with the post in winter, because the horses know each yard of the road from one stage to another. But a nervous traveller may even thus be exposed to trials of his courage; for economy makes the postmaster provide the smallest possible number of postilions, and passengers are sometimes sent across a mountain in a sledge without a driver, following the sledge in front. I once crossed the Julier in a dark night of January without a postilion and without any reins to guide the horse by. My reason told me that the beast knew his business better than I did. But, none the less, I felt forlornly helpless when he was floundering about in depths of snow I could not realise. It is always best to take things as they come, however; and I comforted myself by reflecting that even an Englishman is a parcel which postmasters are bound to deliver safely at its destination.—*Cornhill Magazine.*

THE SEA AND SHORES OF AZOV.

By the Rev. ALFRED COLBECK.

[Read to the Members in the Memorial Hall, March 6th, 1889.]

I DO not claim to be able to say anything quite new about the sea and shores of Azov. This sheet of water, with the land on every side, is perfectly well-known. The fascination of many geographical subjects is in being able to tell new things. Remote and partially explored regions awaken deep interest in the minds of all geographical students; but when the regions are comparatively near, and every part of them has been surveyed and carefully marked down in maps and charts, and when the manners and customs of the people inhabiting these regions are generally known, the only interest is in a record of personal observation. By every such record we gain a new point of view. We see familiar objects in a fresh light, and if the fresh light invest these objects with unexpected radiances, we may be thankful for it, and it may prove worth having.

In the summer of 1884, after a short sojourn in the Grecian Isles, and a shorter rest at Constantinople, I found myself approaching the south-western shores of the Crimea. The dark blue waters of the Euxine gradually changed in colour, assuming lighter and lighter hues, as the vessel proceeded northwards along the Crimean shores. As we drew near to the Bay of Kertch the waters became green, indicating shallower seas and a dark sandy bottom. We rounded a low-lying fortified promontory into the bay, and let the anchor slip in about twelve fathoms of water.

The scenery was a perfect contrast to the scenery on the southern shores of the Black Sea. No cliffs, no hills, no varied vegetation, but sandy beaches that sloped upward into the greenest pasture land, unrelieved by a single tree, and dotted with browsing cattle. The shores of the bay swept round in an almost faultless semicircle, and in the bend lay the grey town. Its square-built houses stretched along the margin of the sea, and the dome of its mosque-like church, with the gilded cross surmounting the crescent, as in other once Mohammedan towns, lifted itself above the tide.

To the eastward nothing was to be seen but very low land, which lost itself to the vision in marsh and flood, with a house here and there, lonely, and as if stranded.

Kertch is an important official town, standing at the gates of the Sea of Azov, to permit or forbid entrance into these Russian waters. The soldiers who man the fortifications find homes here, and also the government medical officers and examiners of cargo, whose duty it is to inspect ships' crews and grant *pratique*, and to seal up all prohibited articles except what are absolutely necessary for the use of the crews until their return through the Straits of Yenikalé.

Having arrived late in the afternoon, we were not fortunate enough to receive sanction to proceed that day. We were obliged to remain overnight under the supervision of two young soldiers who were sent aboard in the evening. Early next morning, however, we were visited by the various officials and their assistants, who, notwithstanding the trying nature of their visit, and while insisting with quiet firmness upon a complete inspection of the vessel, were the pink of politeness. We were deemed healthy, and none of our belongings were placed under ban, and, as soon as we had courteously bidden them farewell, we weighed anchor and steamed away for the Sea of Azov.

The Straits of Yenikalé are not more than four miles wide in any part, and the navigable channel is so narrow as only to admit of two moderate-sized vessels passing each other. The channel is carefully indicated by floating poles, and there is no danger while keeping well between them. Should one of the poles be accidentally carried away, the fixed fine of roubles must be dutifully paid, that, without expense to the government, a new pole may immediately take its place. The elaborate fortifications of the Bay of Kertch, and the difficult navigation of the Straits of Yenikalé, make the Sea of Azov a tolerably safe naval shelter.

Entering the Sea of Azov through the Straits of Yenikalé the waters continue to change their hue. The pleasant green merges itself into a yellowish-brown—the not very attractive but prevailing hue of the Sea of Azov. The waters become still shallower, and the bed of the sea darker; but as the straits are left behind the ruffled surface of the waters stretch away on every hand, and the land only becomes visible again as we draw near to the anchorage ground about the entrance to the Gulf of Taganrog.

The Sea of Azov is pear-shaped, its converging shores running northward, with an inclination to the east, and terminating at the mouths of the Don. It covers an area of 14,000 square miles. The coast line is comparatively unbroken by bays and islets, with the single exception of the Putrid Sea, *the Siwash*, on its south-western border, whose still waters, reeking with unhealthy exhalations, are closed in by the long and narrow tongue of Arabat. In no part of the Sea of Azov are the waters more than eight or nine fathoms deep, and, as we proceed northward, they gradually diminish in depth to four or five fathoms. In the Gulf of Taganrog only small tugs and flat-bottomed lighters can ply with any safety. All merchant steamers and trading vessels are obliged to anchor in the entrance of the gulf, fully twenty miles from Taganrog, and from the mouths of the Don still further; and all cargo has to be brought alongside the steamers and shipped in the open. The weather is not always favourable to this method of taking in cargo. Considerable delay, in the early and late seasons, is sometimes occasioned by stormy winds. The anchorage, too, is not always of the safest, for, while the bottom is sandy, the waters are so shallow as to be violently agitated in strong gales, and, now and again, the very bed of the sea is exposed between the leaping waves.

The waters of the Azov are not so much a sea as a widely-extended estuary of the river Don. The Greeks and Romans called it a lake. In area the Azov may very well be called a sea, but its waters are fresh—the waters of the river spread over a wide plain; and the lower orders of the Russian people, who work aboard the steamers, stowing wool or shovelling grain, scruple not to dip it up from the ship's side and use it for cooking purposes. I have seen them often throw over a bucket, haul up the water, and pour it into their iron cooking pot, in which they prepared their stew of strongly-smelling vegetables, and dark-brown bread, with a few shreds of broken meat to keep up the pretence of stew and save its character.

For three or four months every year the Sea of Azov is one unbroken sheet of ice. The ice of South Russian winters closes up for some time ports like Odessa, directly on the Black Sea. We might, therefore, expect that the fresh shallow waters of the Sea of Azov would easily become ice-bound, although, in milder winters, the ice is treacherous on account of the currents under the ice caused by the constantly flowing waters of the Don. The southern portions of the floe have been sometimes sucked through the Straits of Yenikalé, and then the ice has broken loose from the shores and commenced to float downwards toward the Black Sea. To the fishermen, who drive their sledges long distances over the frozen surface of the sea, and pierce the ice for fish, this liability of the ice in milder winters to float away is a source of danger. Three years ago last January a thousand fishermen, with the winter belongings of their trade, were carried away, and while many were rescued from their melting raft, others were drowned in the deeper waters.

Not much can be said for the Azov as a hunting ground for the naturalist. The most interesting denizen of its waters, commercially as well as scientifically, is the royal sturgeon. These widely-extended fresh and shallow waters furnish an excellent spawning ground for this large and valuable fish, and the Russians in the vicinity make the most of its presence by capturing and converting it into *caviare* and isinglass. Sturgeon may be found in any part of the Azov. I have seen a very large one landed at Taganrog; and among the ordinary welcome viands at our table, beautifully cooked by an English lady resident in Taganrog, were sturgeon steaks—a dish that would be fragrant to the nostrils and delicious to the palate of the most fastidious epicure. The most famous sturgeon fishing ground, however, is on the east coast, between Cape Dolgava and the Straits of Yenikalé, affording a comfortable livelihood to the inhabitants of these flat and marshy regions.

Another interesting frequenter of the Sea of Azov is the pelican. This large bird, ungainly on the shore, but very nimble while fishing, may be seen in flocks, and is by no means timid at the presence of man. The first I observed, sitting on the water some distance away, I took to be a swan. When I saw a flock of them on the wing, however, following one after another, not in a direct line, but obliquely, I knew them to be pelicans. They will allow one to approach quite near, if sufficient caution be exercised, and thereby afford opportunity for carefully watching their habits; and the adroit aim and force with which they seize the passing fish, and transfer its wriggling body from the water to their pouches, considerably enhances one's opinion of the qualities of this somewhat stupid-looking and very melancholy bird. These pelicans breed among the marshy lands of the south-east, and doubtless pass backwards and forwards over the depressed wet plain between the Azov and the Caspian.

The enthusiastic entomologist would find the Sea of Azov and its adjacent lands, in the summer time, a gathering-ground not to be despised.

The extraordinary phenomenon of mirage may be seen to splendid advantage in and about the Sea of Azov. Objects below the horizon are painted on the morning mists, not only in natural size, but sometimes in the most gigantic proportions. The phenomenon may be observed at sea as well as on land, and the optical illusion occasionally produces a curious mental effect. One morning I stood on the deck watching a small tug on its way to Taganrog. It approached the horizon, and I was every moment expecting to see it dip and vanish. But, to my astonishment, it crossed the horizon, and continued its journey in midair. I could hardly trust my vision. I took the glasses, and examined it, but on it went through the air. The atmosphere was perfectly still, and, as the small vessel receded, I became aware of two straight lines of smoke, one from the funnel to the point where the tug had crossed the horizon, the other vanishing at an opposite point in the air. I watched the lines widen, and the tug grow smaller, and at last beheld it vanish altogether in the heavens. It really seemed as if the tiny craft had departed on some aërial voyage, and might come back again one day with information about the scenery and inhabitants of the north star.

With the exception of the sturgeon fishing ground in the south-east, the Sea of Azov owes its commercial importance to the towns on its western coast—Berdiansky, Marianople, and Taganrog. Of these three towns, the last named, founded by Peter the Great in 1688, is by far the most considerable, boasting ten churches, and a population of nearly thirty thousand souls. Its historical associations, especially those which link it with the closing years and death of Alexander I., are full of interest. The town is built on flat land lying back from marly cliffs, which here lift themselves above the water. There are very few good buildings, and until recently even the main street was unpaved, although, like the streets of all Russian towns, those of Taganrog are wide and straight, and almost invariably run at right angles. The conspicuous exception to the poor architecture is a beautiful cathedral, standing in a large square on the highest part of the plateau, and in the centre of the town, proportionate in its external appearance, and richly adorned, after the manner of Russo-Greek churches, inside.

The commercial importance of Taganrog, however, is relative; and were it not for the busy and much larger town of Rostoff, about thirty miles up the Don, with which Taganrog is directly connected by rail, and from which its supplies are drawn for the steamers in the roads, Taganrog would soon sink into insignificance. It is really the port for Rostoff, and the towns lying further back but within the basin of the lower Don. This noble river runs through the remarkably fertile grain tract of decayed vegetable matter which largely constitutes the commercial wealth of South Russia; and down this river the broad and shallow lighters bear their burdens of grain to the steamers lying away in the Taganrog roads. Grain is not the only produce of this district. There is a considerable trade in wool, hides, tallow, &c.—and while the working part of the trade is mostly conducted in Rostoff, and the towns further up the river, the business transactions centre in Taganrog. Were it possible to dredge a channel for steamers into the Don, so that they might proceed direct to Rostoff, Taganrog would shrink into a village; but on the bar at the mouth of the deep and wide river there is only four feet of water, and while this bar remains unaltered the prosperity of Taganrog is secure.

The old town of Azov, which gives its name to the sea, built upon the older site of the ancient city of Tanais, on an elevated ground opposite Taganrog, several miles from the margin of the sea, and where the southern branch of the Don breaks off to form the delta. Long years ago it was the only important town on the Azov. The little commerce of the district passed through it; but it was important not as a commercial town so much as a strongly fortified military station, occupied first by one people and then by another, until at last captured and added finally to Russia by Peter the Great. The fortifications are now in ruins, and the group of miserable cots can hardly be dignified by the name of "town."

Doubtless, along the western borders of the Sea of Azov, lay the routes of some of those Asiatic hordes, who, like tidal waves, have again and again swept into Europe and receded, leaving traces of their devastations behind them. There are many tumuli, curious mounds, twenty-five to thirty feet high, surmounted by roughly chiselled granite sphinx, in the neighbourhood of Taganrog, running in a north-easterly and south-westerly direction, not only along the western seaboard, but across the isthmus of Perekop into the Crimea, and across the Don into the rolling steppes beyond. These tumuli have been the subject of much conjecture; but the most probable explanation of them is, that they were landmarks directing the wandering hordes across the wastes where natural means of direction are very scanty.

While in these mounds we may have traces of Tartar invasions and evidences of their established routes between Europe and Asia, we have more reliable traces in the ethnographical features of the people inhabiting the region of the Azov. The long occupation of this region by the Golden Horde has most certainly left its traces in the facial expression of the people. The various tribes of Cossacks in the vicinity, and more especially the Calmucks, who are only a short distance away, retain the personal appearance and the pastoral tastes of their nomadic forefathers. The Cossacks leave the trade of the Azov to other hands. Mixed among the Cossacks are many Muscovites who have gravitated southwards, the poorer people among them to find employment in connection with the different trades; but the management of the trades—the buying, and selling, and getting gain—is mostly in the fingers of foreigners, Jews, Greeks, and English predominating.

Should the Straits of Yenikalé continue navigable, and the Sea of Azov become no shallower, its commerce will be maintained, and to a certain extent developed, although its ports can never successfully compete with other ports more easily accessible, and directly on the Black Sea. Among South Russian ports Odessa stands without a rival, and Nicolaieff on the Bug is a finer town, and has a more favourable mercantile situation than any town within the Straits of Yenikalé. Both Odessa and Nicolaieff are well connected by rail with the interior. They draw their supplies from much the same region as the ports of the Azov. It would seem as if the Azov were filling up, but the process is very slow. Centuries ago its waters are known to have been very shallow, and yet within a lifetime vessels could approach much nearer Taganrog than it is possible for them to do now. Immense quantities of gravel must be annually washed down the Don, and deposited in even layers over the bed of the sea; and, unless the current through the Straits of Yenikalé is strong enough to clear the bed and scatter the gravel in the deeper waters of the Euxine, the Sea of Azov must become shallower, and in the course of ages converted into extensive reaches of marshy plain. Should this process be going on, the future of the Azov region is not likely to be a prosperous one. It cannot be so prosperous, even should it retain its present natural features, as the seaboard of the Euxine to the west of the Crimean peninsula. But if mercantile enterprise, nationally assisted or otherwise, were vigorous enough to clear a deep channel for merchant vessels through the Taganrog roads, and into the mouth of the Don, the prosperity of this region would rapidly develop and become very abundant; for the Don is so deep, and wide, and slow, that, if once in, direct communication might easily be opened up with vast stretches of fertile country, and produce brought straight away without the expense, and risks, and delays of trans-shipment with which the commerce of the Sea of Azov is now heavily burdened.

Grandfather's Clock, in the Zanzibar dialect, from Central Africa, with a translation by the Rev. T. Wakefield, will interest some of our members—

SAA ya Babu kaenda vizuri,
Miaka, jamaa ! tissaini ;
Ndefu kuliko mzee mwenyewe,
Lakini mwenyewe mnene.
Siku ile azaliwa,
Ile saa yanunuliwa,
Yakamfurahisha dayima.
Illa, tu, bass ! hainendi tena,
Akifa mzee.

CHORUS.

Tissaini, miaka, wee !
Ti ! Ti ! Ti ! Ti !
Haichoki kulia, wee !
Ti ! Ti ! Ti ! Ti !
Illa, tu, bass ! haiendi tena,
Akifa mzee.

(Translation.)

Well went grandfather's clock,
(For) Ninety years, my friends ;
Longer than the old man himself,
But he (the man) himself is huge.
The day he was born
(On) that day was the clock bought,
And it rejoiced him continually.
But, all is over, it goes not again,
The old man died.

CHORUS.

Ninety years, look you !
Tick ! etc.
Never tiring to speak (tick or strike)
look you !
Tick, etc.
But, all is over ? the it goes not again,
The old man died.

NOTES OF TRAVEL FROM SHANGHAI TO ST. PETERSBURG.—*(See Map, page 56.)*

BY MR. J. M. MOLESWORTH, C.E.

[Addressed to the Members in the Memorial Hall, March 6th, 1889.]

HAVING already procured a companion, and received permission from the Russian Legation at Pekin to travel across Mongolia with the mail leaving the capital on the 22nd of September, and, having applied through the British Consul at Tientsin for the necessary Chinese and Russian passports, I sailed on the 12th September from Shanghai for Tientsin. We had a very rough passage till we got round the Shantung promontory and into Cheefoo at 5 a.m. on the 15th. At midnight, the same night, we sighted the light at Taku, the entrance to the Pehio river. In trying to cross the bar we got aground, and stuck till nine o'clock the next morning. In going up the river, at one of the numerous bends our steam steering-gear got wrong, and we got hard and fast on the bank and stuck there till two o'clock the next day, so did not reach Tientsin till 5 p.m. on the 17th September. As soon as I landed I found that the Russian mail left for Pekin the next afternoon at two o'clock, and that as the roads were very bad it would be necessary for me to get my baggage carts off some hours before that. I also found the Consul had forgotten all about my papers, and had not applied either for a Chinese or a Russian passport.

The next morning I started my baggage wagons off at four o'clock prompt. I procured some letters of credit and introduction from a Russian merchant to a correspondent of his at Kiachta, and, having laid in a stock of sycee,* said good-bye to my friends, and, accompanied by my Chinese servant, mounted our ponies and started to join the mail, at the Russian Consulate. The mail bags were on donkeys, and the escort (two Cossacks) on ponies like ourselves. We had only just started when a messenger arrived from the hotel to say our baggage carts had returned, as, owing to the flooded state of the roads, they were unable to proceed. The only thing to be done was to try and get by boat, so I sent for a boatman, and after haggling with him, promising him extra pay and hiring a double crew, I persuaded him to try his best to get me in time. I got my baggage on board, and at four in the afternoon started for Tung-chow. These boats are called by foreigners house-boats.

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* Ingots of silver used instead of coin

After a journey of sixty hours we reached Tung-chow at daybreak on the morning of the 21st, and after some bargaining procured carts to convey baggage and ourselves to Pekin. These Chinese carts are not the most comfortable vehicle in which to travel under the most advantageous circumstances—but add to this that we had to travel over a road paved with blocks of stone several feet long and from one to two feet wide, no two of which were on the same level, and as the road had had to bear the traffic of centuries from and to the capital, great holes were worn in them in places. The carts have no springs, and the drivers no conscience, so that down goes one wheel into a hole, up goes the other over a step, and then down with a crash. You have got your eye on the one to prevent your head getting bumped, when up rises the other side and hits you a crack on the off side, until your poor head and bones ache again. We had about ten miles of this, when we made a detour, and, after going across country for another ten miles, reached Pekin at two o'clock in the afternoon.

The country, which up to Tung-chow is more or less flat, then begins to undulate till north of Pekin you get range after range of hills.

I find I have no time to give a description of Pekin, but no doubt you will have all heard it described at a previous meeting of the society.* Suffice it to say that its streets are dirty, that it is very hot in summer and cold in winter, that it has some fine buildings in the shape of temples and palaces outside it. Foreigners are not supposed to trade in Pekin, so that the only foreigners permitted to reside in it are the members of the various legations, missionaries, and the staff of the Imperial Maritime Customs. I at once went to the British Legation, to see what I could do about getting passports, only to find, to my disappointment, that it would take at least three days to get a Chinese passport, and a Russian one could not be procured until the return of the English Chargé d'Affairs, Mr. Grosvenor, who had gone to Tientsin. I therefore went to the Russian Legation, and the Russian Chargé d'Affairs at once offered to visé a certificate that I was a British subject, and I decided to risk going without a Chinese passport. My friends very kindly offered to procure mules, &c., for my journey to Kalgan, as I had to leave with the mail early the next day. However, the next morning word was brought that none were to be had, so messengers had to be sent all over Pekin for them. In the afternoon some arrived, and after a good deal of wrangling I got away, about three o'clock, on the 22nd. The mail had been gone some hours, so I had to travel hard to catch it up again. I drove right through Pekin in a cart—a few miles to the north this had to be exchanged for a mule litter, and my baggage carried on the pack mules, as the roads became worse and we had to cross the various mountain ranges. More haste worse speed! This kind of travelling is not so pleasant as you might think—the climax being reached when on going through a pond in a village in the middle of the night the hind mule stood still, the front one going on, dropping the chair and myself souse into the water. Considering it was a cold night, and I could not change, this did not add to my enjoyment. Between two and three in the morning we arrived at a village where the Russian mail had halted. After a meal on tinned beef, biscuit, and some tea (no milk or sugar), I rolled myself up in a rug on the cong,* and soon forgot my troubles. The Cossacks roused me at five, and without breakfast I had to turn out and push on ahead. The country now was very hilly, but cultivated and populous. Soon after leaving the village we passed through the inner Great Wall at the Nan-kau Pass. At noon we stopped at a village to rest and get something to eat. Here some dispute arose between the Cossacks and their mule drivers—the local Chinese, siding with their own countrymen, attacked the Cossacks most furiously. They defended themselves for some time, but at last took refuge in the room where I was. The Chinese soon demolished the doors and windows with stones, and things looked very serious until my boy, who had managed to escape from the inn, returned with the mandarin of the place, who proceeded to quieten things down. We got away about 4 p.m., and travelled till nearly midnight. Before we reached our haven for the night the mules ran my chair into a tree, upset it, and in falling the Chinese lantern fell underneath and the whole thing was in a blaze. I scrambled out and did the rest of the journey on a donkey. The place we stopped for the night was a large walled city, Suan-wha-foo. The night was very cold and the roads bad. The Cossacks had me up at 3-30 a.m., but gave me time to have something to eat, and started a little before five. Travelled over hill and plain, passed some walled cities, and through others till 10-30 p.m., when we halted for the night. The next day we reached Kalgan, the frontier town inside the Great Wall of China. Here, after some trouble, I discovered my fellow-traveller who had preceded me. He was staying at a mission station, and thither I also went. As we had to start the next day on our journey across Mongolia we had no time to lose, and at once set about procuring what we required, and making preparations necessary. We each bought a sheepskin coat and breeches, and a goatskin bag to sleep in at night, some brick tea for barter with the Mongols, &c., Kalgan is a busy place. The caravans carrying tea from

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* See the Rev. G. Owen's address, page 1.

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* A brick bench serving as a bed.

China to Siberia converge here and pass through the gate of the Great Wall. Camel-carts had been procured for us through our Russian and Siberian friends, and, having got our bedding and sheepskins into them, we wished our missionary friends goodbye, left M. with the baggage, whilst I walked on in order that I might pass the guard-house in the Great Wall without giving rise to any suspicion that I was going further, and so be asked for my passport. M. having one could get my baggage through as his own, without trouble. If the Chinese had found I had no passport I was liable to be sent back a prisoner to Pekin. I strolled up to the gate, spoke a few words to the guards, then, as if to inspect the wall, I wandered on and on till I got round a corner, when I took to my heels and ran till I got to the house of a Russian, where I took refuge until M. arrived.

As the *existence* of the Great Wall has been almost called in question lately, and has been the subject of some controversy in the newspapers, it may interest you to hear something about it from one who has been through it several times, and at points far distant from this pass at Kalgan, which is well known to foreigners. Speaking roughly, I should say it averages nearly 30ft. high to the top of the battlements, and is about 16ft. or 18ft. wide between the battlements, but is some few feet wider at the foundations. In some places the foundations are of stone. The wall itself is faced with very large bluish bricks, the space between being filled with earth. This wall is carried over the tops of the highest mountains and down into the deepest valleys, spans the rivers, and has a gate at each pass; and here outworks are constructed and forts built on the hills to command the pass, and towers are built at regular intervals along the wall. I was shown a chain in one place by which they used to make gong signals from tower to tower. As soon as M. arrived we settled with our Russian friends. I sent my servant back to Tientsin with letters for friends in China and at home, and with our baggage in two native carts, and two covered ones for ourselves, we turned our faces north, and started on the 26th September across Mongolia. Our baggage carts had each eight mules in and covered carts three, and we found we had not one too many, as our road lay up a ravine and along the bed of a river. We toiled on till about nine o'clock, when we halted for the night—and having now no servant we had to cook our own food—after which, rolled in our sheepskins, we slept in our carts, preferring that to sleeping in the filthy inn.

The next day we had a series of adventures; but I will not detain you with them, except one, where the cart carrying the Russian mail (and on which the three Cossacks who acted as escort for the mail were lying), in some way or other toppled over the side of the hill, and the ground being stony they received, in addition to the shaking, serious wounds on their heads and faces. M. and I dressed their wounds, and with the assistance of the drivers and mules hauled the carts up on the road again, lashed the wounded men on the top, and proceeded on our journey. Between 10 and 11 p.m. the same night we reached a Mongol encampment, where we halted. Here we commenced our camel journey, so the next morning our mules and carts were sent back with the exception of the two camel-carts for M. and myself; and after the usual delays in loading and unloading the camels, squabbles between the Cossacks and Mongols, with intervals for refreshment, we at length made a start about two o'clock in the afternoon of the 28th September. Our caravan consisted of six camels for the mail, two riding camels for ourselves, two cart camels, and six baggage camels, three Cossacks and one Mongol with the mail, and three Mongols with our camels. A Mongol led the way with one of the camel carts, then followed all the camels in a string, the rear being brought up by the other camel cart and a Chinese pony we brought with us for hunting any game we came across. Each camel has a Y shaped piece of wood passed through the bone of the nose, with a notch cut in the straight piece, to which a thin piece of rope is attached. This rope is just hitched through some portion of the harness of the preceding camel, or to the back of the cart, in such a way that if the camel stops suddenly to pluck at a blade of grass or a little bit of bush, which they frequently do, the rope comes away without damaging the nose of the camel. The weather was beautiful, though the nights were very cold. We had one rather severe thunderstorm soon after starting, but it was soon over. The Cossacks had a tent to sleep and cook in; we had also a small tent to cook in, but we preferred to sleep off the ground on our carts.

It is impossible for me in the time at my disposal to give you anything but a rough outline of the journey. I will give you, therefore, a general idea of what we did, one day's routine being much the same as another. We roused up at daylight, lighted a fire of argol or dried camel's dung, got breakfast ready, usually consisting of a plate of porridge, biscuit, cup of tea with fresh milk, either goat or mare's (when we could get it), or else tinned milk. After breakfast wash up (if we had any water to spare), pack our cooking utensils, plates, &c., in boxes made on purpose, take down our tent, load the camels, stow away our sleeping wraps, and start. We would then travel on till sometime in the afternoon, say 2 p.m., but depending on the water supply. If we came to water in reasonable time, so much the better; if not, we had to fall back on our own barrel, which we carried with us, and always kept replenished at the first water we came to. This was the time for our big feed, which had to last us till breakfast next morning. In the southern portions we could barter for a sheep or goat with the Mongols for brick tea, but when we got into the desert proper we had to rely entirely on tinned meat and biscuits. We had some potatoes with us, but they took too long to cook. As soon as dinner was over we washed up, packed, loaded the camels, and started again, and travelled usually till about 2 a.m., sometimes later, seldom earlier, being again guided by water.

Camel travelling is very slow work—on an average, I should say, under three miles an hour. It is not that they actually move so slowly, but the constant stoppages to rearrange the loads or harness, or a camel gets loose and wanders off the road, and has to be brought back.

My companion and myself used to go excursions with our guns, taking turns on the pony, and look for game, and sometimes got good sport, and replenished not only our own larder but the Cossacks and Mongols' too. On the undulating downs and low hills of Southern Mongolia there is plenty of grass and water, herds of goats, sheep, camels, and horses feed on the plains. Here we found geese and duck, snipe, and other water-fowl. In the less frequented portions we saw herds of antelopes, turkeys, and smaller animals, and at night we sometimes heard the howling of wolves and other wild animals, but never saw any until further north. The carrion-crow and vulture were also to be seen when a camel, ox, or sometimes even a human being, sank to die on the plain. Though this did not happen in our case, we saw plenty of it in the desert.

The southern portion of Mongolia is, as I have already stated, undulating and hilly, with plenty of herbage for the Mongol herds. The Mongols live in "youarts," or circular flat-topped tents of felt, a circular hole cut in the roof to let out the smoke, which, however, they cover up at night with a felt mat, whilst another mat does service as door. The interior of these youarts are black with the smoke from the argol fire, which is most painful to the eyes until you get used to it. They squat round the fire on mats, helping themselves with their little wooden bowls out of the iron pan on the fire. They are very dirty, seldom if ever washing (which in some parts is impossible). Many are lamas or priests wearing the gaudy coloured clothes of their order, but covered with grease, filth, and smoke. They are a very quiet, inoffensive people, hospitable in their own way, and living just as they have done for centuries. They used to be highly delighted with an empty glass bottle, sardine, milk, or meat tin. Our great drawback was that our only means of communication with them was by speaking Chinese to the Cossacks, who translated it into Mongol. A few words, however, we quickly picked up, such as "Sine-bino" ("Is it well?"), their salutation, and the answer, "Sine-bina" ("It is well"). Their cooking is very primitive. They asked us one day to join them.

Over their argol fire was a circular cast-iron bowl, say 1ft. 6in. diameter and 6in. deep. Into this they first put some water—clean or not, no matter to them. I found they have no objection to a flavour of argol. Into this they put a handful or two of small yellow millet seed, let this boil a little, and then added a piece of brick tea; then they threw in lumps of mutton fat and some bones we had given them. We did not require a second helping. They had little wooden bowls, and a knife (but no fork) carried in their girdles.

For about four days we were travelling over this kind of prairie, then we came to huge sandy plains, more or less barren, broken occasionally by low rocky hills. The plains, which sometimes took us a couple of days or more to cross, would terminate quite abruptly, and we would descend into another. In one place the plain would be strewn with quartz pebbles, in another blocks of granite, scoriæ and lava. We picked up many pieces of bloodstone. In one district we passed for miles the bleached bones of oxen, camels, and in some cases human beings. I presume they must have died of fatigue and thirst. We met several large ox-cart and camel caravans coming south, mostly unladen, except a few hides. They would return with tea.

If you examine the map of Mongolia (my travelling one is by Stanford, and a very good one) you will see all along the route little dots or circles with names to them. These are misleading, as you would infer they were towns or villages, whereas really they are only what ought to be wells or holes dug for water, and some of the names imply this, as "Sine ussu" means good water, though not good in our sense, as it is often brackish, and as the oxen and camels tread the ground all round, in their eagerness to get to the water, its condition is easier understood than described.

The only village of any kind we came to or saw between Kalgan and Oorga was a lama settlement that we came upon on the 11th October, or sixteen days from Kalgan. The houses were of stone, plastered over. There were two temples and a monument to Buddha, or some Mongol deity, in the village, which was situated in the midst of the most barren and weird-looking rocks. After passing this place, called T-tchai, the grass became thicker and longer than before, and though we passed the bones of oxen and camels, we also saw droves of horses and passed several "youarts." Then gradually the hills became higher, the herbage thicker, and we crossed several streams; the roads, however, in places were so bad and steep that we had to procure oxen and men to assist our camels over the passes. Here we saw some yak.

On the 15th of October, or twenty days from Kalgan, we crossed the river Tola (a tributary of the Angara), several times, and about noon, in a heavy snowstorm, we entered the Chinese quarter of Oorga, passed through it to the Mongolian town of Kuren or Huren. This place, the seat of the Bokh or chief lama, is said to be 4,000ft. above the sea, and 350 miles south-east of Irkutsk. I should put it at quite 500 miles from Irkutsk. The population is made up of some Russians or Siberians, a Chinese colony, and several thousand Mongols. The Bokh lama temple contains an enormous image of Buddha, in sheet brass, clothed in handsome silken robes. The Mongol town is unique. Each house, built of wood, stands in a large compound, surrounded by a palisade of trees cut in poles, sharpened at the top, about 8ft. high, and say 6in. diameter, so that for its population it covers a large area. Here, for the first time, I saw the "praying machines," some small enough to be carried about, not more than three or four inches diameter, others like a young "merry-go-round" at a fair, or a "ship's capstan," in a building with grown-up Mongols gravely pushing them round and grinding out their prayers. We were told that one son in each Mongol family becomes a lama, and they have here a kind of college and monastery for them. We here procured fresh camels, our others being done up, and sold our pony. Oorga seemed a busy place. All the caravans from China to Siberia converge here. Much of the tea is taken from here by Siberians in carts, they coming thus far from Kiachta for it, Mongols, with either ox-carts or camels, doing the remaining distance to near Kalgan, where the Chinese take it up. We did not get away without trouble, the Mongols providing us with two camels and a man less than they had agreed to, but as we could only speak through a Russian, who spoke very little, and that little bad, English, we gave it up as a bad job. We started off again the next day, 16th October, after being about twenty-four hours in Oorga. The weather had become very cold, and it snowed, more or less, the whole way to Kiachta on the Siberian frontier.

The country between Oorga and Kiachta is mountainous, sometimes rugged, often well-wooded. In crossing one range we came upon a strange sight. It was moonlight, so that we could see well. The trees in every direction were scattered about, some torn up by the roots, some snapped off short, many having the appearance of having been struck by lightning. I mention this, as I have often seen the effects of storms in various parts of the world, but I never have seen such complete devastation over such an area. The scenery was often very fine, and the more pleasing to us after the barren country through which we had been travelling. Here we saw magpies again for the first time since just north of Pekin. We also saw wolves here, and from what we heard at Oorga they must be very numerous and bold. We crossed several small rivers, some of which gave us some little trouble to get our carts over. The Cossack escort had been very troublesome for some time, getting drunk, quarreling and fighting with the Mongols, and causing us no end of trouble and annoyance, sometimes even threatening us. We were, however, quite prepared for them in case, in a drunken frenzy, they should attack us, and I think they knew they would come off second best in an encounter; so to spite us they stole quietly away one night with the mail, deserted us, and we only once saw them in the distance afterwards—we were at the top of a pass and they were far away in the plain. But for the awkwardness of being left with fresh men, who did not understand us nor we them, and who perhaps did not know where we wanted to go, we did not mind the Cossacks going, and managed very well with our two Mongols, and they seemed quite happy with us, and brought their friends and relations to call and sit over our fire, or watch us cook, and get a present of an empty sardine tin or glass bottle.

On the morning of the 21st October, the twenty-seventh day from leaving Kalgan, we descended from the mountains in a very heavy snowstorm into a plain covered with dense forests, through which our road had been cut, and through which we travelled for a considerable distance. On emerging we saw to the north the dome and cross of a large church glittering in the sun, which was now shining. It was still a long way off, but we knew it must be Kiachta, the Siberian frontier town, and right glad we were to see a friendly roof. As we did not exactly know where we could put up, I mounted a Mongol pony, and with one of our Mongols on another, left my fellow-traveller and the remaining Mongol to look after the caravan, and galloped as hard as we could towards the dome. We had, however, some seven miles to ride when we came to the Chinese frontier treaty settlement of Mai-ma-tchin, a little place of some 400 Chinese. Through this we passed, and immediately found ourselves in the Siberian town of Kiachta. I had a letter of introduction and credit to a merchant, a Mr. Gribooshin; but how to find him, the Mongol was as much at sea here as I was, and I could not speak a word of Russ. Everyone I met stared at me, but made no sign of doing anything else, till at last I saw a gentleman with a double-barrelled gun over his shoulder (this turned out to be an officer in Colonel Prejevalsky's expedition, which was about starting across Mongolia towards Thibet). I dismounted, and showed him the letter. He read the address, but evidently did not know the house, so called a man, who told him where the house was, while he turned back, and after showing me the house left me. Giving my pony to the Mongol to hold, I knocked at the door. It was a large log-house, standing in its own compound. By this time a crowd had collected, consisting chiefly of nursemaids and children, and the only result of my knocking was the appearance of a lot of servant-maids, who, when I showed them the letter, only giggled and shook their heads. I made out, however, that the person I wanted was not there. So I left, not finding anyone who could understand me, until I spotted a Chinaman. I informed him I had just come from Pekin, and he was quite pleased to act as interpreter, so we returned only to find that M. Gribooshin and family were away. I, however, had a small package I had been asked to deliver by a Russian gentleman in Tientsin, to a friend of his in Kiachta, so I thought I would try the effect of that. Having told the Chinaman the name, we proceeded to the house, followed by my Mongol. The Chinaman seemed to know his way about, for he opened the door and ushered me into what was evidently a drawing-room, and which, to my horror, I found full of ladies, gentlemen, and children, evidently having an evening party, probably a birthday. It was, however, too late to beat a retreat, as the only available exit was blocked by the Mongol, who, to make things worse, had also come in. I had, therefore, to make the best of it, so I produced the package and handed it to (as I presumed) the lady of the house. I had, as you will understand, never been in bed for thirty days, not since I left Pekin; my hair and beard were long and unkempt. I was much weather-beaten, my clothes were travel-stained and anything but presentable, and here I was sitting on a sofa with a Chinaman on one side and a dirty lama camel driver on the other. This was probably the first time the latter had ever been in a room or under a roof in his life. No one could speak English, French, or German, so the conversation had to be carried on through the Chinaman until the arrival of a lady who spoke French. I then found there was no hotel or guest house at Kiachta, but this lady thought they could get us a room in a private house where the lady and her daughter both spoke French. However, they required great persuasion to take us in, but at last consented. I then sent the Mongol to meet the caravan and to bring it to the house. On its arrival we unloaded, got the luggage into our quarters, a tiny room with barely space to move in. We were only too glad to have a roof over our heads. Having had something to eat, we rolled ourselves in our rugs on the floor (no beds), and were soon asleep.

By treaty with China only a certain number of people are allowed to live or even, I am told, sleep in Kiachta.

The washing arrangements of the Siberians seem to be of the most meagre description in their houses. They go apparently to the public baths once a week or fortnight, perhaps not so often, and leave the rest to Providence. At any rate, in the morning we foraged for some sort of vessel to wash in, and at last discovered a big tin basin, but to our mortification it was only the receptacle for the slops. Above it stood, or rather was fixed to the wall, a brass vessel like an urn, without a spout or tap, from the bottom a knob projected, and on pushing this up water trickled down. You caught a little in the hollow of your hands, and you washed, or tried to do. This was the public and only wash place for the establishment, and was hardly sufficient, especially as the domestics were constantly going backwards and forwards through the hall or passage.

Kiachta is not now the flourishing place it once was. Formerly it had the entire monopoly of trade with China, but since Chinese ports have been opened it has lost much of its trade. Its cathedral is evidence of its former prosperity—not so much the exterior (as one Siberian church, as a rule, is much like another), but the costly interior decorations and fittings, paintings from Europe, silver altars, rood screen of gold, silver and precious stones. We were told the screen alone cost in Russian money equal to £10,000. The tower is badly cracked by an earthquake. We saw also large warehouses for storing tea. The population of Kiachta is about 500, consisting of merchants and their families. But a little over a mile away north is the town of Troitz-kos-avsk, built to avoid treaty restrictions placed upon Kiachta, with a population of about 5,000. It has a government school and other public buildings, shops, and a former customs-house. Now the customs barrier is between Baikal and Irkutsk. We were kindly received and treated by the gentleman to whom we had letters, and when he returned the next day he drove us over to Troitz and introduced us to a professor at the school who spoke English perfectly, and who was exceedingly useful to us and gave us valuable information. Mr. Gribooshin insisted on our taking one of his own servants as valet as far as Irkutsk, as we could not speak a word of the language. He would, so said our friend, prevent our getting into trouble, and would see, at any rate, that we reached Irkutsk (where, probably, we should get an interpreter) in safety. Having shown our papers to the Frontier Commissioner, and procured from the police, through our friends, the necessary "podorojna," or permit to travel, we arranged to start for Irkutsk on the afternoon of October 24th. There were no horses, however, to be had till eleven o'clock at night, when our two *tarantasses* arrived. We at once proceeded to get our baggage packed into them, and said good-bye to our friends, who had been waiting since 4 p.m. to see us off.

As we are now posting all the way to Europe, with the exception of 300 miles in the Ural Mountains, it will be as well to give you some idea of what travelling in Siberia is. The first thing to do is to procure the "podorojna" or permit. These are of three kinds—first, the "courier's," only used for important or state business; secondly, the "crown" podorojna, usually given to officers or officials, sometimes as a favour to travellers. Both these confer certain privileges on the holder of them in the way of getting horses over the heads of other travellers, &c. The third is the "ordinary podorojna," and this was the one we had procured, in this instance, as far as Irkutsk, paying a small sum for it. The podorojna states the number of persons travelling, vehicles and horses required, and has to be produced to each postmaster before you can procure fresh horses, conveyances, or men. Next the vehicle. You can either travel "periclodnoi," that is, hire a tarantass from post-house to post-house, just as you do your horses and drivers, or you can *buy* an "equipage," and only then have to hire horses and drivers, and you have not to change your luggage at every post-house. This is the easier and more genteel way of travelling. But we could not do this. The winter was coming on fast. It was already bitterly cold, and the first fall of snow might compel us to leave our "equipage" at some out-of-the-way place where we should be able to get nothing for it, and we should have to travel on in sledges. Our friends had offered us two equipages for sale, which we declined with thanks. I may mention here that owing to the position of and the prevailing winds at Kiachta snow does not lie there, and they use wheeled vehicles all the year round.

Now to describe the tarantass, in which, in winter, I hope it will not be the lot of any of you to travel In shape like the half-shell of a walnut, no seat, no springs, the body mounted on poles (to which the wooden axles and wheels are connected), into this you have to put your baggage, of whatever shape, size, or kind, and sit on the top of it, so far as a small hood at the back will permit you to sit upright. Think of travelling in this, hour after hour, in the bitter cold, night and day, always on, stopping every two or three hours to get fresh carriages and horses, and do fresh packing and pay for your horses for the next stage. You may have time to eat a bit of black bread and get a tumbler of hot tea, or you may have time to thaw a piece of a leg of mutton you have got with you in the tarantass. Packing a tarantass is an art, only learnt by practice, and has to be gone through at every post-house you come to—morning, noon, or night. The distances between these vary from about ten to over thirty miles.

We had to have two tarantasses. Nicolai, our servant, rode in one, with some of our baggage, whilst M. and I travelled in the other on the top of the rest. We sometimes had during the first portion of our journey, if we arrived on the banks of a river during the night, to wait until daylight before we could cross, as they were not entirely frozen or were unsafe. There are no beds at the post-houses, so you simply lie down on the floor on your sheepskins, and get what sleep you can until you are allowed to proceed. The only thing the postmasters are bound to provide you with is hot water in the samover or urn.

Travelling rapidly over rough roads, at high speed, necessarily throws a great strain on the tarantass, and we frequently had upsets or breakdowns, broken axles, broken wheels, or the wheels coming off. Our first upset occurred on the second stage from Kiachta, and our driver had to go back and bring a fresh vehicle. We were ferried across the river Selenga, which flows into Lake Baikal, in the midst of great blocks of ice, that came floating down the river, making the passage both difficult and dangerous.

The country near Kiachta was rather flat and sandy, but we soon got among the mountains and had a taste of Siberian driving. Usually we had three horses abreast, sometimes more, never less. The horses are smaller than English horses—very hardy, not much to look at, but good to go. They are always driven abreast. The centre horse only is in shafts, the others are trace horses, and taught to turn their heads outwards, which gives them the appearance of trying to break away. The shafts are fastened to the arch or bow, always seen in pictures of Russian sledges or carriages, and to the top of this bow are hung the bells. The horse collar is in turn lashed to the shafts at the bow by thongs. There are no brakes used at all, and as the hills are very steep and often long, and the whole weight of the vehicle comes on the one horse's shoulder, it will be readily understood that there is not much control, as far as stopping the vehicle.

We began to go down slowly enough, but a walk quickly gave way to a trot, and a trot to a gallop, so that by the time we got to the bottom it was a matter of chance if the horses could keep in front of the carriage. It makes your hair stand on end at first, but you soon get used to it. Our troubles are not yet over as there is the wooden bridge that spans the valley to cross yet, and this speed has to be kept up to help us up the hill on the opposite side. The rains have washed the road material away, so that the planking of the bridge forms a step, against which first our front and then our hind wheels come with a crash, and up we go in the air. Once I cut my head badly by being jumped up at one of these bridges, and my head coming against the iron frame of the hood, after which I was more careful how I sat.

The scenery between this and Lake Baikal was very fine—the mountains covered with snow and the hills thickly wooded. In summer these valleys must be lovely when the trees are in full leaf and the flowers out. In some parts we travelled for miles through burned forest—in one the fire was still raging.

We reached the shores of Lake Baikal on the afternoon of the 27th October, three days from Kiachta. We found we must wait here for the steamer to return from the other side, the roads round the south of the lake being blocked with snow. The only place to put up at was a log-house on the shore—not at all an inviting place—and our man Nicolai made us understand by pantomimic signs that we must be careful to keep our revolvers handy—why, we never knew. The wind was very high, and the waves breaking over the landing-stage and freezing on it. We could speak to no one, and our only means of communication was by signs. We had read that the lake was celebrated for a fish called the "omul," which we wished to try, so we intimated we should like some to eat. Some time after they brought us one, just caught, cut open, put on a dish raw and covered with oil. It is needless to say we did not ask for it again, but they seemed to think it a delicacy, and brought us another the next day.

The steamer arrived on the 29th. We got our baggage on board, and started across at 4 p.m., reaching Listvenitz, on the other side, at 10-15 p.m., or 6¼ hours. The steamer was a paddle, and bore a strong family likeness to Noah's Ark. The engineer and captain were extremely civil. The former, a Prussian, finding we were English, brought another engineer, a Scotchman, to call upon us at the inn on arriving at Listvenitz. He had lived so long in Siberia, however, that he had practically forgotten what English he ever knew, and the only way we got at him and brought him back, so to speak, to his native heath, was by producing a bottle of real Scotch whisky. This little attention he highly appreciated.

At 5-30 the next morning we started again in tarantass. The weather was beautifully fine, but very cold. Our road skirted the lake for some distance, till we reached the spot where the Angara runs out of Lake Baikal, and here we had a magnificent sight. The mountains to the east, north, and south were covered with snow. The Angara rushes out of the lake with such rapidity that at the rapids it is said never to freeze, though the lake will be covered with ice 6ft. thick. Sometimes the river runs between steep cliffs; at others the forest comes down to the water's edge, and the branches and twigs of the trees get covered with ice from the vapour rising from the river, and sparkle in the sunlight, making a lovely picture.

Our next halt was at the customs barrier, of which we stood in great dread, as we had heard stories of horrible doings there —dubbing being seized for dynamite, and soap and other articles being looked upon almost as contraband, and rated accordingly. However, being very dense, we could not understand anything that was said to us, except when the chief, a Prussian, suggested that as it was rather cold we might go into his room and warm ourselves; but to all his questions as to who we were, where we were going, what hotel in Irkutsk we were to stop at, where we came from, &c., we shook our heads and said nothing. After examining our papers, and turning every box, bag, and parcel inside out, and putting seals on our provision cases, he let us go. The barrier was raised, and off we drove. Reaching Irkutsk at 2 p.m., we put up at the Hotel de Siberie. No one in the hotel could speak anything but Russ, which was awkward. However, they gave us a room, and soon after a Pole, in Russian uniform, arrived. He informed us he was ordered to report himself at St. Petersburg, and that as he spoke English, French, German, and Russian he would be glad to accompany us as interpreter, which offer we accepted. We presented our letters to Mons. Pied-it-ni-sats-ni-koff, and after dinner went to the theatre.

Irkutsk is the capital of Eastern Siberia, and the seat of the Governor-General. It was partially destroyed by fire in 1879, and had not yet fully recovered, large open spaces still remaining. Formerly all the houses were of wood—now, I believe, the Government insist on brick being used. There are some very fine churches, a gold-smelting usine belonging to the Government, and many large buildings, barracks, convict stations, museum, clubs, &c. We visited the gold usine and saw the whole process, from receiving the bags of gold dust from the natives in bags, smelting, &c., to the storing the bar gold in the safe, whence it is taken every winter, under strong escort, to St. Petersburg. The cold was every day increasing, and we found our wraps would not be sufficient for the journey before us. We therefore bought felt boots, felt socks, sheepskin coats, hoods, fur-lined gloves, and had a large rug made out of our Mongolian sheepskins—these were for travelling. For wearing in towns we bought Astrakan caps and a shouba, or long cloak, lined in my case with marten skins and with a large fur collar. We made an excursion outside Irkutsk, crossing the Angara by means of a self-acting swinging ferry, the only one I saw of the kind. Two wooden hulls are fixed side by side, a few feet apart, and a deck of planking carried over both so as to form one large platform. A rudder is fixed to each hull and connected by a rack, this rack being actuated by a pinion worked in the usual manner from the steering wheel. Near the front and stern of the deck are placed two frames, each composed of two stout uprights and a cross-bar on the top the full width of the deck, and perhaps eight feet high. To the cross-bar at the stern is fixed a rope. This rope passes over the fore cross-bar and is then carried a considerable distance up-stream, where it is anchored. At short intervals from the anchor small boats are lashed to this rope. To cross it is only necessary to put the helm hard over in the direction in which you wish to go, and the current then swings you across; to return, you reverse your helm. This ferry carries a large number of passengers, cargo, cattle, horses, and carriages. The river has a swift current.

We left Irkutsk at 10 a.m. on the 5th November. There not being as yet sufficient snow for sledges, we kept to our tarantass travelling, and pushed on as hard as we could along the banks of the Angara, then across a plain, and through forests, changing at every post-house. In order to cross some of the rivers where the ice was not safe, we had to leave the post road and our tarantass (as the drivers are not allowed to go off the post-road) hire country carts, go along the banks till we found a ferry where the river was open, get ourselves and baggage ferried across, and then hire fresh carts to take us to the nearest post-station. The weather was intensely cold, and we found our wraps not at all too warm. On one stage one of our "yemstchicks" was drunk, and in going down hill lost control of the horses, which bolted, upsetting the tarantass and dotting the road with our various portmanteaus, bags, packages, &c. We had to send the other tarantass back to pick up the bits. At one village we were kept waiting several hours during the night by the postmaster, the river not being safe to cross in the dark. Whilst we were waiting some Russian merchants arrived, and bribed the postmaster to let them have our horses (the only ones on the station), which meant a delay of many hours to us. Our interpreter tried to stop them, but did not succeed. The postmaster then came into our room and became very insulting, my companion at last knocking him down and giving him a bloody nose, on which he raised such a commotion that the whole place was up, and we had an unpleasant time until the mayor arrived to take us prisoners, and it was only after a long explanation and our threatening to telegraph to the Governor-General at Irkutsk that he was induced to let us go. However, to make amends, he procured private horses and tarantass, and escorted us safely out of the place. We began to suffer now from the intense cold, bad food, hard travelling, and want of sleep. Between the post-houses our breath was frozen inside, all our wraps and our eyebrows and eyelashes frosted. At this point we met a large convoy of prisoners going east, some walking and some riding in carts. In some of the carts there were women and children. None of the prisoners appeared to be ironed, although we looked specially to see if we could detect the heavy chains we had so often heard and read about.

The soldiers, forming the escort, seemed to anticipate no attempt at escape on the part of the prisoners, most of their arms lying in the carts, some of the soldiers also riding and chatting and smoking with them. It must be a terribly weary tramp for these poor wretches, day after day, week after week—though many of the stories of cruelties one reads about in novels and accounts of so-called escaped exiles are, I believe, gross exaggerations, especially those about the quicksilver mines. They have quite a wretched enough existence as it is.

On the 9th November, we were obliged to halt for the night, my companion being knocked up and our interpreter complaining. However, the night's rest put them on their legs again, and we were off again at 6 a.m. Soon after starting, the front wheel of our tarantass came off. We were pitched out—driver, baggage, and all. Beyond a good shaking and a few bruises we were none the worse, but it caused us some delay.

After more breakdowns we reached the town of Kansk at 1 a.m. on the 12th November. Here we stopped for the night to procure fresh "podorojnas." Kansk, the departmental town, has a large population, a fine church, and good wide streets. The country round is undulating and but few trees. Further on, however, we again travelled through forest. One night we had a lovely sunset. Being on an elevation we could see for miles nothing but forest as far as the eye could reach. As the sun went down in a perfectly clear sky it lit up the frost-covered trees, and gave them the appearance of being on fire.

On the 13th November, just before reaching Krasnoiarsk, we crossed the great river Yenesei, which is said to be 3,500 miles long, rising in the Altai Mountains in Mongolia and flowing into the Arctic Ocean. At Krasnoiarsk, 1,700 miles from the sea, it is over 1,000 yards wide. It is very rapid. In spring the current is said to reach seventeen miles an hour, yet it was now sufficiently frozen for us to cross in sledges.

Krasnoiarsk, chief town of the province, possesses a cathedral and several churches, some large public and several large private buildings, population 13,000, and seems a pleasant place. The country round is picturesque and well-wooded. Had dinner brought in from the hotel to post-house, and enjoyed a square meal, and as we had to wait for horses we could take our time, though it took a hungry man to enjoy even this dinner.

Left at 1 a.m. Bitterly cold, but beautifully fine. Our baggage was getting all knocked to pieces by this rough travelling.

The next night, at Atchinsk, we tried to get something in the way of dinner. A bill of fare was brought, with a menu of over thirty dishes. This looked well, but beginning at No. 1 we went through the list, and they were unable to give us a single dish on the menu, so we had to content ourselves with tough beefsteak, bread, and bad beer.

Since Krasnoiarsk we have travelled entirely in sledges. The cold became more and more intense.

At one village we were informed by an officer travelling that the next village was *en fête* and the postmaster and assistants helplessly drunk. The postmaster from this station, therefore, accompanied us to see that we got through all right, and it was well for us he did, for the post-house was a miserable hovel, and the whole population seemed drunk, and we should otherwise have got no attention. It was snowing heavily now, day and night, which in open sledges is not agreeable. We reached Merinsk at midnight on the 15th, but only stayed a couple of hours, and pushed on for Tomsk, where we arrived at 4-35 a.m. on the 17th, twelve days from Irkutsk.

Tomsk, the capital of the province, stands on the banks of the river Tom. The province has the second largest population in Siberia. The mountainous districts are rich in minerals, whilst the land round the villages is very fertile and produces good grain. The climate is said to be good. The first thing in the morning we paid a visit to the baths, of which we stood much in need, never having had our clothes off since we left Irkutsk. We then proceeded to leave our introductions and look about the place. Here, as in the other places, we attracted more attention than we cared for, and at the hotel had to dine in a private room to escape being stared at. We had an introduction, amongst others, to a Mr. G., whose wife was English, and who had a sister living with her. They were, however, almost unable to speak English, having been born in Russia, and I presume lived in Russia and Siberia all their lives. They were, however, delighted to meet any of their countrymen, and it made our stay very much pleasanter from the fact of being of our own country, however indifferently they spoke the language. Cold here intense. My companion narrowly escaped being frost-bitten, and we had all to be very careful.

Tomsk has some fine churches and other public buildings, many of brick. Its population is said to be about 30,000. The streets are wide, and in some places steep. We here bought a sledge of our own, so now have not to move our luggage at each post-house, only change horses and drivers. We left Tomsk at 1-25 p.m. on the 20th November. Our interpreter and Russian friends regaled us with bloodthirsty stories of the dangers of the road. We were never personally molested, though I have sometimes seen rather suspicious people loitering about in the forests. We were well armed, and never made any secret of it. We felt the cold most keenly, even through our furs and wraps and all our clothing. On the morning of the 21st we crossed the Obi. This river is joined thirty miles north of Tomsk by the Tom and then by the Irtish. It has a course a little under 3,000 miles from its source to where it flows into the Gulf of Obi, and so into the Arctic Ocean. In going downhill we ran into a sledge coming up, and killed one of our horses, and further on the sledge was upset and damaged. The post-houses here are poorer than east of Tomsk, and we have entirely to live on the provisions we carry with us. Passed more convict gangs but saw none in irons. Country flat, and but thinly-wooded.

Between Tomsk and Omsk we travelled over what is known as the Baraba steppe, a flat, almost barren, plain, dotted over with lakes and ponds, and in summer marshy ground. These, of course, were now frozen over, so that we frequently crossed them. The Baraba steppe is many thousand square miles in extent. On the 23rd of November, at night, while we were crossing the steppe, it had been snowing heavily. The roads were bad and the snow deep. We heard the howling of wolves, and our "yemstchicks" or drivers became greatly excited, calling to us in Russian, "Wolf' wolf!" and yelling and shrieking at their horses till they flew along. At length, however, they pulled up, and our interpreter shouted to us to get out and fire—that our drivers were afraid. If we did not, they would make a rush for the horses. So we rolled out and gave them a few shots—they were close upon us—drove them off—jumped in to our sledges and dashed off again as hard as our horses could go, only to have the same thing repeated. The wolves were too quick for us and were gaining. Our drivers pulled up, and we got out and gave them another volley, this time at close quarters. We could see them against the snow—great gaunt brutes they looked. We did not wait but flew off again, and reached our post-house without further incident. The distance from post-house to post-house was, as nearly as possible, 29 English miles, and we did the journey in about two hours and ten minutes, notwithstanding the deep snow. Had to get sledge repaired. Interpreter's finger frost-bitten.

We arrived in Omsk at 5 p.m. on the 24th of November, and at once ordered dinner, of which we stood in great need, and shortly after sat down to a sumptuous repast of fish, sucking pig, plover, and champagne. After dinner we went to the baths, the rooms of which simply swarmed with insects, beetles, cockroaches, &c., &c. When I came to put my clothes on I simply had to shake them out. I had had several years experience in the East, but had never seen such swarms before.

Omsk is the seat of the Governor-General of Eastern Siberia, and is a commercial centre, for besides being on the highway from China and Eastern Siberia, the Kirghiz from Central Asia visit the market, bringing their goods on camels. They much resemble the Mongols, but are perhaps the better looking of the two. Omsk has also several manufactories and a population of nearly 20,000. It has a large square, well laid out streets, and fine buildings. We called on the Governor, who in return sent us his aide-de-camp, to show us about and look after us. He also offered to be of any assistance he could on our journey. We visited the theatre and also attended a ball. The cold here was intense. I was told by an officer, that the previous night the thermometer registered −40° Reaumur.

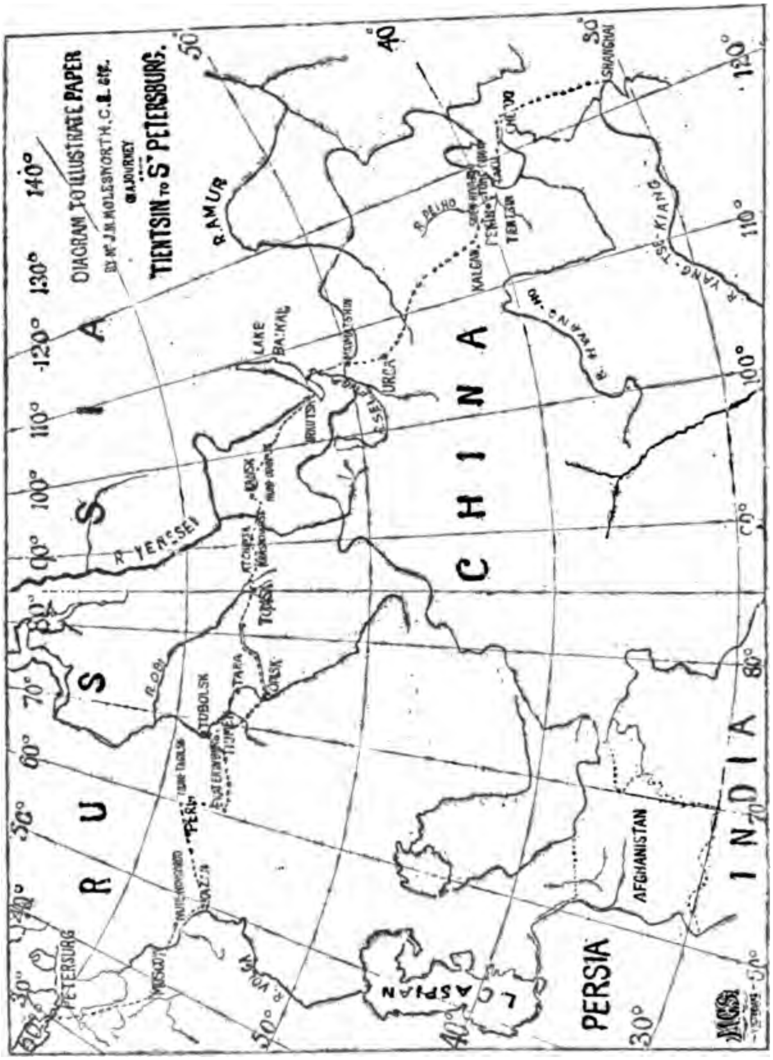
Left Omsk early on the 28th, and reaching the town of Abatsk branched off the main road towards Tobolsk. Weather warmer. Country undulating and thickly wooded, though timber of small growth. Villages poor, and inhabited chiefly by Tartars.

After crossing the river Irtish our horses somehow slipped over the bank, without, however, taking the sledge with them.

Reached Tobolsk on 29th November; capital of government. It stands at the confluence of the Tobol and the Irtish, 1,976 miles east of St. Petersburg. It has wide and regular streets. The lower town is subject to inundations. Here we received great attention from the police, who followed us about wherever we went, and finally came into our room at the hotel and asked for our papers. Our sledge was repaired here by a Polish exile. Left Tobolsk at 8 a.m. December 1, passed the large convict station, sledging along the banks of the river to Tiumen, which we reached early on the morning of the 2nd. Called on Messrs. Wardroper, who are engaged in building steamers, &c., for the river traffic. They were also much interested in the attempt of Captain Wiggins to open up a trade route, between Hull and Siberia *via* the North Cape, the Kara Sea, the Gulf of Obi, and the other large rivers flowing into the Arctic Ocean, one of them having been to the Gulf of Obi in connection with this matter, and we had a most interesting conversation on the subject. Saw and read the *Times*, the first newspaper we have seen since leaving Shanghai. Tiumen, on the river Toura, a tributary of the Irtish, is an important commercial centre, having also ship-building yards and engineering works. We started again at 11 p.m., and met large numbers of sledges with machinery, &c., going east. We were disappointed with the Ural mountains.

We arrived at Ekaterineburg about 2 p.m. on the 4th December, and visited various shops, where precious stones, for which the town is celebrated, are sold, and also articles in agate, &c. Another day we drove out about ten miles to visit the gold Zarod, where we saw the ore crushed, ground, and the other processes for extracting the gold. The officials in this, as in other instances, were most civil and obliging. This being St. Catherine's Day, the patron saint of the town, the whole place was *en fête*, and we attended a grand ball in the evening at the club. The next day we visited the Imperial stone usine, where vases and other articles and ornaments, made from the different beautifully coloured porphyries, &c., found in the vicinity, are manufactured for the emperor's palaces.

Ekaterineburg has some fine churches and other buildings, and a population of about 35,000, and seems a well-to-do place. We left at noon by train through the Ural mountains for Perm. The railway station is a magnificent building, with handsome and spacious buffet and dining-room, &c.; and at all the large stations we found the refreshment department good. The carriages are very large and well-fitted. The distance from



SKETCH-MAP OF THE ROUTE OF MR. MOLESWORTH FROM SHANGHAI ST. PETERSBURG.

Ekaterineburg to Perm is 312 miles, and there are 33 stations, at all of which we stopped. At Nijni-Tagilsk, a most important mining centre, we stopped for dinner. Gold, platina, iron, and copper, are found in the vicinity, and the works and mines of the Demidoffs are said to employ upwards of 30,000 hands. On reaching the summit of the Urals we passed from Asia into Europe, and arrived at Perm on the 9th at 8-30 a.m. Perm is a large departmental town, with fine buildings and large works, notably the government arsenal. Here we were delayed, as there was not sufficient snow. However, we got away the next day at 1-30 p.m., but had to have five horses in our sledge, four in another, and three in a third. Very cold again, and snowing.

About noon on the 13th December, we arrived at Kazan, the ancient Tartar capital. We found it a most interesting old place. It is said to have been founded in 1257. Many of the buildings are of brick. We had to leave our sledge (or what was left of it) behind us here. It had got so dilapidated with the rough travelling,—and had again to hire one at every post-house. To make some amends for this we managed to procure a "crown podorojna," which would insure our getting horses quicker. We had to start early on in the afternoon, as on leaving Kazan we must cross the Volga, and the police allowed no travellers to cross the ice after sunset.

We pushed on as hard as we could for Nijni-Novgorod and passed through some towns of considerable size, where we found the post-houses larger and much more comfortable than the ones we had hitherto met with. We began to meet a large number of travellers now the snow-road having formed.

On the evening of the 14th December we entered a large town, the post-house of which, though a large one, was crowded with travellers. Here we were told we should have to stay the night, the river not being safe to cross after dark. While waiting for something to eat, a Russian gentleman sent a message that he would be glad if we would join him in his private room, and we were only too glad to escape from the crowded public room. Our host was Prince —— a descendant of one of the old reigning families. He was extremely civil to us, and insisted on our dining with him, and as a preliminary, his servants brought into the room a tin basin, or bath, in which fish were swimming about. We were told to select the one we liked, and when we had done so it was speared and killed by the cook, and shortly after appeared on the table cooked. Our host informed us that he had already attempted to cross the river, but that his drivers, in taking a short cut, had taken his sledge over rotten ice, the consequence being that it broke, and he was very nearly drowned. However, his sledge and valuables had been recovered, and they were only now waiting for their clothes to dry and would then start again.

He had sent for the "police master," and every care would now be taken to insure the safety of his party whilst crossing. He kindly invited us to accompany him and travel with him to Nijni. We gladly accepted his offer, and left the town with quite a procession, nine sledges, twenty-nine horses, a police escort, and a number of men to assist us in going down the steep streets to the river, and help us to cross the ice. These streets were, I think, the steepest I ever saw. We were compelled to walk down, and our sledges were let down by men with ropes. We all got safely across and then started off again. Reached Nijni-Novgorod at 3-30 p.m. on the 15th December. Here our sledge journey finished. We sold off such of our wraps and stores we did not require, and after seeing the sights left again on the 16th by train for Moscow, where we arrived in 12½ hours, at 9-30 a.m. the next day. We stayed sight-seeing in Moscow till the 22nd, when we left in the mail at 9-30 for St. Petersburg, where we stayed until the evening of the 26th. Leaving then by train for London, and arriving there on Saturday evening the 29th, we came on to Manchester, and arrived there on Sunday morning the 30th December—108 days after leaving Shanghai, of which 85 days were spent in actual travelling.

TABLE OF APPROXIMATE DISTANCES.

Names of Places.	Mode of Travelling.	Miles.
Shanghai—Tientsin	Steamer	800
Tientsin—Pekin	Boat and cart	80
Pekin—Kalgan	Mule litter	130
Kalgan—Kiachta	Carts and camels	900
Kiachta—Irkutsk	Tarantass	312
Irkutsk—Krasnoiarsk	Tarantass	671
Krasnoiarsk—Tomsk	Sledge	369
Tomsk—Omsk	Sledge	585
Omsk—Tobolsk	Sledge	417
Tobolsk—Tiumen	Sledge	172
Tiumen—Ekaterineburg	Sledge	204
Ekaterineburg—Perm	Rail	312
Perm—Nijni Novgorod	Sledge	669
Nijni Novgorod—St. Petersburg	Rail	675
St. Petersburg to Manchester	Rail	1,873
	Total	8,169

SUMMARY.

Cart, camel, sledge, and carts	4,509
Steamer	800
Rail	2,860
Total	8,169

CORRESPONDENCE.

LUKOMA: AN ISLAND IN LAKE NYASSA.

A communication from the Venerable Archdeacon Maples, read to the Members in the Library, March 20th, 1889, by Mr. G. H. WARREN).*

MORE than a quarter of a century has passed away since Englishmen for the first time gazed on the waters of Lake Nyassa. So long ago, indeed, as the year 1854, the pioneer missionary, John Rebman, collected and sent to England some interesting information as to the existence and situation of the lake, as well as regarding some of the races dwelling on its shores. It was, however, reserved for Drs. Livingstone and Kirk to share the honour of being the first Europeans not only to reach Nyassa, but also to navigate its water. They, indeed, cannot be said to have discovered the whole of the lake, for, sailing northwards, they thought they saw the mountains closing in at the north end, at a point about 11 degrees south of the equator. According to their reckoning, therefore, it appeared to be about 220 miles long. Subsequently, a circumnavigation of its waters was made by Commander Young, who found it to extend some 130 miles beyond the point believed to be its extreme limit by its first discoverers. The twenty-seven years that have elapsed since Dr. Livingstone's first journey to the lake have been marked by many important discoveries in the lacustrine regions of Equatorial Africa; and no small progress has been made towards opening up these remote districts to Christianity and civilisation.

I do not, however, propose in the present paper to dwell very particularly on the work that is being done on the shores of the great lakes Victoria Nyanza, Tanganyika, or Nyassa, by any of the various missionary agencies that are busy there. Even the work of the mission of which I am an unworthy labourer will be very briefly and incidentally noticed. In this short paper I propose to try and give a clear account of the natural features of the island in Lake Nyassa, where we, of the Universities' Mission to Central Africa, have recently formed a station and begun the work of evangelisation.

At the outset I may mention that Lake Nyassa is the southernmost of all the great Equatorial lakes of Africa; that it is about 350 miles in length, and that it has an average breadth of 40 miles, the middle part being broader than either of the ends. It lies nearly due north and south, and is for the most part very deep, shelving often very suddenly from the shore. Liable to heavy storms, and swept often by boisterous winds, high seas are of common occurrence, and waves are raised on its surface which would not discredit the briny Atlantic itself. The waters of Nyassa, however, are innocent of brine, yet clear and blue as the Mediterranean. It has a coast-line which, though very rocky in places, is but little indented by deep bays and inlets. The only islands of any size which are both inhabited and cultivated are Lukoma, which I am about to describe, and its neighbour Chisumulu. A few rocky islets close to the shores of the lake, towards the north end, are the homes of a few refugees who dare not live on the mainland hard by for fear of the predatory tribe, the Gwangwara; but these poor fugitives build their houses on rocks only a few square yards in area, where there is neither space nor herbage even for their goats, and where there is not soil sufficient to allow of any cultivation. Other tree-clad rocky islets there are at the southern end of the lake, in some cases rising to a considerable height out of its waters, the homes of otters, crocodiles, hyraxes, and smaller animals; but on these no human being has fixed his dwelling-place.

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With these reservations I shall be understood if I say that, practically, the only islands on Lake Nyassa are Lukoma and Chisumulu. These are situated abreast of one another and some four miles apart, Lukoma being about 5 miles from the eastern shores of the lake, and Chisumulu between 10 and 11. Of the two islands, Lukoma is much the larger, being perhaps three times the size of Chisumulu, with a population proportionately greater. In shape our island is rectangular, lying NE. and SW. It averages 4½ miles long, by about 2½ broad, and, roughly speaking, may be said to comprise an average of 12 square miles. The population, for reasons that will appear in the course of this paper, is unusually large, there being nearly 220 people to the square mile. Dr. Livingstone, although he passed up the lake to a latitude considerably north of Lukoma, sailing along the western shore, failed to discover the island. Probably it was entirely hidden from his view by Chisumulu, which he mentions in his "Zambesi and its Tributaries," and which he places wrongly in the middle of the lake, exactly half-way from either shore.

The first traveller who landed on Lukoma was, I believe, the late Consul Elton, who with his fellow-voyagers walked all over it in 1877, and who in a work, published posthumously, entitled "The Lakes and Mountains of Eastern and Central Africa," has recorded his impressions and made several notes of what he observed during his visit. Since that date the island has been occasionally visited by other travellers and missionaries, while two years ago it was fixed on as a favourable spot for missionary operations, by the Universities' Mission to Central Africa, and accordingly has become the centre of the Nyassa branch of its work.

The island lies equidistant from the northern and southern extremities of the lake. Exactly opposite it, on the eastern shore, are situated two very large towns of Nyassa people, ruled over, the one by a man named Chiteji, and the other by Mataka. All the inhabitants of the island acknowledge more or less the suzerainty of one or the other of these two men. Some few people, indeed, who are immigrants from the further side of the lake, assert their independence of both, but as they are for the most part quiet and inoffensive, it rarely becomes necessary for either of the chiefs in question to "show their teeth."

The lake is very wide near Lukoma, so that even from the island's western shores to the western side of the lake the distance cannot be less than 40 miles. Sailing in a direction WNW. from Lukoma the further shore is reached at Bandawe, the point where the "Livingstonia" Mission of the Free Church of Scotland has now its principal station, and of which Dr. Robert Laws is, and always has been, the very life and soul, supported as he is by a band of workers worthy of such a leader. As we look from our island across the lake to the mountains, at the foot of which our Scottish friends are established, our view is obstructed by a high hill on Chisumulu, which effectually prevents all possibility of communication by means of signal-flashing with mirrors. The communication we do hold with them from time to time, is by means of the brave little steamer Ilala, which for nearly a dozen years has plied ceaselessly on the lake, and which now, very far from being on her last legs—if so unnautical an expression may be employed with regard to her—is the property of the African Lakes Company. The steamer belonging to our mission, named the Charles Janson, in memory of a saintly fellow-worker, who has been called to his rest, also crosses occasionally to Bandawe, and enables us to carry on regular communication with the outside world, by bringing up our letters and stores from the Shiré, which river they are placed on by the Lakes Company, who undertake the charge of them from Quilimane. In addition to these two steamers, there are a man-of-war's galley, a yawl, and a Delta metal centre-board boat, fitted for engines, and also for sailing. The galley and the centre-board boat belong to us, the yawl, originally presented by Harrow School to Mr. Cotterill, who accompanied Consul Elton's party ten years ago, has now passed into the hands of the Scottish missionaries at Bandawe. These four vessels make up the entire sum of the European craft at present afloat on the lake. A great deal of traffic is carried on by the natives in their own canoes or "dug-outs," which are propelled only by paddles, the use of the sail being either unknown or avoided by them. There are also five or six large dhows, built after the usual East African type, and used almost entirely in the nefarious slave traffic. These belong to one or another of the powerful Yao chiefs who have built their villages on the lake shores.

In a full account of Lukoma Island one will be expected to say something both as to its origin and as to that of its name. Treating of the second point first, I may mention that it is through Captain Elton's mistake that it has hitherto appeared as Dikomo in the maps. This name, indeed, it never bears, though as a variant of Lukoma, the pronunciation represented by the spelling Likoma is common enough. The name simply means "beautiful," "pleasant," or "desirable." Of the origin of the name different accounts are given. Some say it was called Lukoma because of its beautiful appearance, as it lies like some rich gem set in the deep blue waters of the lake. But others state, and I am constrained to say that I incline to their opinion, that the island obtained its name because of the safe asylum it affords from the incursions of marauding tribes, with all the rapine and bloodshed that follow in their wake. Natives, we know, have but little regard for scenery and the beauties of nature. On the other hand, they have a very real dread of war, and are keenly alive to the advantages of a place where war seldom, if ever, approaches.

The origin of the island itself is of course a geological question, and one which is far too large for adequate discussion here. I can but drop a few hints to guide those whom the problem may interest, and who have the ability to pursue it further. An answer to the question can only be given in connection with the still larger question, "What was the origin of Lake Nyassa?" And in the present state of our knowledge of the mountains on either side of the lake, and the lithological character of the rocks they comprise, we can do little more than sketch out a few broad outlines.

As far as is at present known, there are no traces of recent volcanic disturbances in the neighbourhood of Lake Nyassa, except, indeed, the remarkable series of lavas, tuffs, and agglomerates at the extreme north end, which form the so-called Konde Range and the Livingstone Mountains, and which Mr. Thomson, the traveller—no mean authority on such a subject—considers to have been in the main the product of one huge crater whose eruption took place in the later Carboniferous period. The origin of the lake must, I think, be traced to hypogene agencies, such as are to be found in the secular cooling, and consequent contraction of the globe. These would give rise to the subsidence of the crust where it has had an excess of density, and in consequence of its upheaval along lines of weakness, such as we may suppose to exist beneath the mountains that now flank each side of the lake. The present basin of the lake no doubt was the seat of this subsidence, and thus the lake itself may be accounted for. Doubtless also the adjacent mountains were upheaved in two enormous and perhaps plateau-like masses of considerable breadth on either side of the lake in the first instance, and at a very remote geological period. Subsequently, subaërial influences affecting these masses have, by erosion and denudation, carved out valleys and depressions and ravines, and have thus given to the plateau an appearance of a series of mountain ranges. I am of opinion, however, that the practised eye of the geologist would not recognise these as (geologically speaking) true mountain ranges; while at the same time such an one would account for Lake Nyassa on the theory of a local subsidence of the earth's crust, consequent upon the contraction of the inner nucleus due to secular cooling, rather than on that of erosion due to subaërial influences, which, however, sufficiently explain the inequalities of level in the mountain plateau above. If this be the true account of the origin of the lake, then the island of Lukoma is to be regarded as an eminence which, when the subsidence of the district now forming its basin took place, was never submerged. An examination of the lithology of the rocks of the island, as well as of its surface soil, would seem to prove that at no time were they under water, since no traces of lacustrine deposits can be detected in any of them; nor are there any sedimentary rocks to be found, save only here and there a few shales, which are so rare and fragmentary as in themselves to be incapable of proving anything as to when, how, and (what is more important) *where* they where first deposited. Possibly (it must be conceded) the waters of the lake may have stood at from 20 to 30 feet higher than they do at present, submerging a small portion of the present island where the land lies low, but I think there are signs that the waters never went beyond this limit. A somewhat similar account of Chisumulu Island would have to be given, though since a considerable part of it is low ground and very fertile, a closer examination of its rocks would probably reveal traces of submergence over a far greater area. A remarkable feature in Chisumulu is a high dome-like hill which I have had, as yet, no opportunity of visiting, but which, from the vegetation that clothes it as well as from the crops raised on it, I should guess to be composed of some entirely different rock from those of Lukoma, which are entirely schistose, with here and there a few shales. The schist of Lukoma is very soft and decomposable, in parts micaceous and in parts hornblendic, yielding rapidly to the effects of weathering. It is subject especially to that form of decomposition and disintegration which is brought about by the expansion of the rock when the temperature is high, followed by sudden contraction owing to the fall of temperature at night, causing it to split and flake off, and rendering it more friable than it would be where the climate is not subject to such extremes of temperature.

The denudation of these soft schists caused by water is even more marked than the decomposition effected by the sudden changes of temperature. Each rainy season commits marked ravages upon their surfaces, and helps forward with amazing rapidity the waste and degradation of the rocks that are ever going on. Compartively compact pieces of rock, laid bare by one season's rains in the bed of some runnel of water from the hills, are completely washed into coarse grit in the succeeding rainy season. No doubt the exceedingly heavy downpours that characterise the tropical rainfall are more powerful as erosive agents than the gentler and more moderate rain of the temperate zones. There are few very large blocks of schist or striking boulders—the hills for the most part presenting surfaces strewn completely over with comparatively small fragments of the decomposing rock. As the rain eats away at the softer parts of the rock, the while diminishing the bulk of the surface stones, these latter get dislodged and rolled down the steeper sides of some of the hills, breaking up into several pieces as they fall. Hence, as a rule, the larger stones or fragments of rock are to be found at the tops of the hills. Where the hills descend more abruptly into the lake, some very large blocks are found at the water's edge, the smaller *débris* having yielded long since to the power of the waves.

From what has now been said about the geological features of the island, it will cause no surprise to any one to hear that the soil is comparatively unproductive. Yet it would be a libel on it to describe it as wholly unfertile. Although there are but few parts of Lukoma where rice, millet, maize or other cereals, can be grown with any success, cassava flourishes everywhere, as also does a favourite kind of hard ground-nut. The oleaginous ground-nut is also cultivated, but will not grow so freely. The people live almost entirely on porridge (prepared from the flour of the cassava root), the above-mentioned nuts, and fish from the lake, which are often taken in large quantities and in considerable variety. In size the fish of the lake range from a small species like a sprat, which is taken in shoals, and called "usipa," to a large kind of mud-fish, often weighing four or five pounds. There is also a very large fish which is described as resembling the porpoise. This is never taken in the nets, though it sometimes gets into them, breaking and tearing them to pieces. On the whole the fish of Lake Nyassa may be said to be superior in quality to most of the European fresh-water varieties.

It must be confessed that the island lacks a good supply of fine timber, though the large number of gigantic and grotesque baobabs which it boasts, together with some other kinds of trees of no mean proportions, prevent it appearing wholly given over to brush and scrub. Amongst smaller trees and bushes, however, there is an unusually great variety of fruit-bearers, including a wild custard apple (*Anona senegalensis*), a species allied to the *Landolphia*, or india rubber vine, which bears a very favourite though very acid fruit, and a whole series of shrubs yielding different kinds of smaller fruits and edible berries. One of the latter resembles, both in taste and appearance, the whortleberries or "hurts" so common in the old country. It is needless to say that none of these have been brought under cultivation. A well-known poison-shrub—which yields a seed now in great request as a medicine in England, and likely, some think, to rival or surpass digitalis as a remedy in cases of certain affections of the heart—is also common. A plant called "tingu," whose stalks afford a strong fibre, is largely grown by the natives to supply them with string for their nets, the weaving of which forms the principal industry of the islanders.

There is little grass in Lukoma, yet large flocks of goats and no inconsiderable herds of oxen manage to thrive well, finding ample sustenance in the scrub and bushes and plants on which they browse. During the rains a plentiful crop of wild flowers spring up, of which the most noticeable is perhaps a yellow one, not much unlike the corn marigold. On the neighbouring island a much larger specimen, far more closely resembling the English flower, is found. A great number of the trees and bushes bear elegant flowers, and it is possible nearly all the year round to have at least a few flowers for purposes of decoration. There are, however, few that have a fragrant perfume, and I have failed to find even one kind of jasmine—a plant which is common in a very large tract of Equatorial Africa.

Turning now to the zoological features of Lukoma, we find it to possess none of the larger mammalia. The largest wild animals are monkeys, belonging to the sub-family of *Cynopithecinæ*, of the genus *Cercopithecus*, which I believe to be represented by only one species. The interesting little animal known as the "galago," which is peculiar to the African continent, and which enjoys a very wide distribution therein, with a large number of differing species, abounds in Lukoma. There may be two species common to the island, both of which are very small. This little animal, my readers will doubtless be aware, must not be confused with the lemur, or so-called "Madagascar cat," although its affinities with that animal are so close as to allow of its being placed in a sub-family of the order *Lemuridæ*. The "coney" of Scripture, the hyrax, is everywhere, true to its description, "making its home in the rocks." Otters abound about the lake shores, also crocodiles, and another large saurian whose skin is in great request for drums. Wild cats roam about stealthily in the wilder parts of the island, and snakes in considerable variety, many of them deadly, are unfortunately only too common. A huge python, though seldom seen, is certainly an inhabitant of the island. Water tortoises, which are of no great size, frequent the shallow parts of the lake close to its shores.

Amongst the birds the most conspicuous are the great fish-eagle, a kind of diver, several species of hornbill, the ubiqitous crow, and a large hawk. Smaller kinds are, a remarkably beautiful kingfisher, two kinds of dove, a swift, and what must be, I think, a whydah finch. A great number of smaller birds, which I am not able to identify, are common in the island. With regard to domestic animals, I may mention that a large number of a very poor kind of dog, like the pariah dog of so many Eastern countries, is kept, and also cats—these last being remarkable for being always jet black, although the wild cat of the country is an unusually well-marked tabby. Every village has its flock of goats, and there are about one hundred head of cattle, distributed through two or three herds. Fowls and pigeons are bred in abundance.

Having glanced at the geology, zoology, and flora of Lukoma, it is now time to speak of its present inhabitants.

Savage Africa has little or no history. Where people have no culture whatever, there can be no written record of the past. Where also they do not build in stone or brick, or any more durable material than reeds, and wood, and grass, and where even the use of metals is confined to the forging of spears, arrows, and hoes, little can be expected in the way of an archæological record. Tradition, vague and obscure in the extreme, is all that we have to fall back upon; and this can hardly be trusted for more than half a century of past time. Thus, in asking how long the island has been inhabited, we have little to guide us to an answer beyond our own wits and reason. It is highly probable, I should say, that, owing to its natural advantages, it has never been long uninhabited since this part of Africa first received its population, and when that was, no man living has data enough to allow of his making even a conjecture. As has already been said, its population amounts to about 2,500. Perhaps from one quarter to a third of the people belong to a tribe on the western shore known as the Wankomanga. The rest are all "Nyassas" or "Wanyanja," and are of the same tribe which is found on both sides of the lake in very great numbers. Some of their largest towns lie between the latitude of Lukoma, and one degree to the south of it. Others are found on the eastern side of the lake, and at its southern end. The eastern limit of the Nyassa people is bounded by the country of the Yaos or Ajawa, while to the west of those who live on the further side of the lake, are found the Wabisa and many others. At the extreme north end there are a few people who speak the Nyassa tongue, although a very little to the north of Lukoma such tribes as the Wanindi and Wakinga take the place of the Nyassa tribe, strictly so called.

The name "Nyanja," or "Nyassa," simply means a large piece of water, or as we should say, a "lake," or "sea." It is impossible to determine at present the etymology of the word, though I have no hesitation in saying that Rebman's derivation "Ni-aucha" (love me) must be rejected altogether as fanciful and absurd. It has already been pointed out that the inhabitants of the island are distributed through a number of villages independent of each other, but all more or less under the rule of two powerful chiefs on the mainland opposite, each village having also its head man, who exercises a sort of minor control over the rest of the villagers, and who is the referee and judge in disputes, or "milander" as they are called. On the whole, the islanders may be said to be a peaceable people among themselves, rarely fighting the one village against the other. On the other hand, petty quarrels between one man and another are common enough, and there is no real principle of unity to bind them together. Society properly so called is a thing yet to come, but come it will as Christianity slowly but surely sows in the hearts of these people the seeds of true civilisation, and points them to the only principles which can build up true social life, and give them a bond of unity.

The main business of the islanders is net-making and fishing. At one or another of these occupations they may nearly always be found employed. If they are not twisting fibre into string for the nets, they are making the nets themselves, or mending them, or casting them. These nets are often very large, and are shared by several families, so that every "take" of fish is divided up amongst the different families owning the nets. Fish is far more plentiful during, and immediately after, the rainy season, though one favourite kind of small fry is almost peculiar to the dry months. Tending the flocks and herds gives employment to some few men and to a larger number of boys.

During the whole of the rainy season, which lasts between four and five months, and for a considerable time after it is over, hoeing, planting, weeding, and agriculture generally occupy the chief part of each day for the women. At other times of the year pot-making, beer-brewing, and various other odd pieces of labour fill out her day for the housewife, who has besides to keep the house clean, prepare and pound the meal, and cook the food for the household. Tobacco is used largely by the Nyassas, not, however, in the form of snuff, and but very seldom chewed. It is smoked in "hubble-bubbles" made from gourds, fitted with a clay mouthpiece. Fathers, mothers, sons, and daughters, all smoke, even the very young children being encouraged to take their whiff when the pipe is passed round, so that it is common for many of them who are scarcely in their 'teens to be constant smokers. But tobacco is not by any means the worst form of stimulant in which they indulge. The islanders also are great drunkards, the evil of drink extending, as in the case of tobacco, to the very young children, who have "moa" (native beer) given to them, even before they are properly weaned. Hence, quite young boys and girls have nearly always a strong taste for the liquor, and very often indulge in the same excesses to which their elders are addicted. As yet, however, the island is happily free from the curse of the European liquor traffic. The native beer, though fairly strong, is the reverse of volatile, and, being very thick, is food as well as drink, so that the effects of large quantities are rather in the direction of inducing a state of torpor and drowsiness in those who have become intoxicated. The brain probably does not become so excited as when the drunken fit has been caused by spirits.

The Nyassa language, or "Chinyanja," as we call it, which is the language of the island, is one of the prefix-pronominal languages belonging to the Bantu family of agglutinative tongues. It would seem to occupy a middle position between the dialects of the Zangian genus and those of the Zulu or southern branches. It is, as compared with some neighbouring languages, such as Yao or Makua, an easy tongue to acquire. Rebman, who more than thirty years ago compiled a dictionary of Chinyanja, was the first to point out its relation to the Swahili of the coast and the (so-called) Kaffir dialects, and to shew that its affinities with these indicate its position with regard to them. It bears in its words so many signs of phonetic decay as compared with Zulu, that it is impossible not to regard it as an older tongue, or, to speak more correctly, an earlier off-shot from the original mother tongue of the Bantu than any of the Zulu or Kaffir varieties. A comparative philologist would, I feel assured, support this view of its age, and, if my memory does not deceive me, it has already been put forth by the man who has done more than anyone else towards constructing a comparative grammar of this family speech, Dr. Bleek. An interesting and lucid account of the main features of the Bantu family may be found in Professor Sayce's *Introduction to the Study of the Science of Language.* The whole of the New Testament is now translated and published in Chinyanja, besides a number of school-books, and a very fair, if not very comprehensive, grammar and vocabulary. The whole of this work has been done by the "Livingstonia" Mission. Dr. Laws, from whose pen most of the linguistic work emanates, has in type the pages of what, it is to be hoped, will prove a very full and copious Chinyanja lexicon. Members of the mission of the Established Church of Scotland at Blantyre have also given much attention to translations in the same language, and are beginning to publish tentative editions of versions of the Gospels and other books of the Bible. So far as I have been able to judge, I should say that Chinyanja has a greater tendency to develop dialectical differences than "Chiyao," its nearest neighbour, which, on the whole, is singularly free from them. A reason for this may be easily assigned. The Yao people are great travellers, while the Nyassas, comparatively speaking, are stay-at-homes. Words, therefore, with the Yaos do not get the same chance of becoming isolated or restricted to one village or small district. With the Nyassas they are more or less subject to such isolation; moreover, the lake itself, which stands in the way of constant communication, helps largely to bring about the dialectical variations of East and West Chinyanja.

It would require a separate paper to set forth fully the religious beliefs and superstitions of the people. Only a few leading features can be dwelt on here. Briefly, it may be said, the people know of God's existence, but it is to all outward appearance an almost wholly infructuous knowledge, leading them neither to worship, fear, nor obey Him. None of them probably would deny His existence, or even His omniscience or omnipotence, though they neither think of Him as a God of love, nor as One to whom the affairs of men are a constant care. They look around on the world outside them, and at themselves, and say, "God made this, and us," but here, for the most part, they stop. A few occasions there are when they supplicate God's blessing on the crops, but only certain members of the community take part in those prayers, and I do not think it can be said to be a universal practice with them either to invoke or make propitiatory offerings to God. The subject is a very obscure one and probably in course of time very much more than we at present know may be found out about it. I feel bound to add, however, that by far the greater number of the people show at the outset profound indifference as to the ultimate issues of life, and of the future state. Exceptions here and there, more especially amongst the younger people, there certainly are, and one and all are willing enough to listen to our preaching; but to say that, as a mass, they are eager to hear the good news of God would be, I must sadly confess, an entire perversion of the fact. As missionaries who have had a somewhat long experience of African natives, this causes us no surprise; and we know, happily, that it constitutes no real reason for being disheartened.

As might be expected, nearly every one lives in almost daily dread of witchcraft, and the belief in it that prevails is the cause often of shocking crimes. Few natural deaths, for instance, occur without its being said by someone that they have been caused by witchcraft. Nor does the matter rest here, for in a large number of cases resort is had to professed medicine-men, who proceed to "ombeza ula" (*Anglicè*, "to consult the oracle"). The "ula" is generally a bag, or skin, or gourd, containing various gruesome-looking articles, such as bones, teeth, pieces of wood, etc. This is shaken by the "doctor," who presently undertakes, by virtue of what it has taught him, to point out the people who bewitched the deceased parties. All believe in the truth of the "ula;" consequently no further questions are asked of the unfortunate creatures whom it is supposed to have pointed out. These are forthwith condemned to die, though sometimes their friends are able to buy them off, and thus save them from undergoing the sentence. More often, however, the terrible sentence is actually carried out. It is but two months since an appaling case of this kind happened within two miles of our mission-houses, when four wretched victims were burned alive without our hearing one word of it until the dreadful atrocity had been accomplished. Had we known what was going to be done, we could probably have rescued the four poor women from their cruel fate by buying them off with cloth and beads. The ramifications of witchcraft—trial by ordeal, and the like—run through the whole of the social life, such as it is, of these people, creating fear, and suspicion, and mistrust on all sides, breaking up families, severing friendships, and interfering, no one can tell how greatly, with the progress of civilisation and enlightenment.

The great event of the year with the Nyassas, as with so many of the savage tribes of Africa, is the dancing, feasting, and special rites that go on at the time when the "nkole" is held. Every year the young girls from the various villages, from the ages of nine and ten to sixteen or seventeen, who have not previously undergone the ceremony, leave their homes, and for two or three months live in booths under the charge of several women, whose business it is to initiate them into all the mysteries of the "nkole," which consist mainly in certain mutilations which are unnatural and degrading in themselves, as well as being subversive of all ideas of decency. Many of the songs and dances at this "nkole" are of a highly immoral character, and the whole ceremony is a deplorable instance of heathen custom utterly at variance with Christian principles and practice. A girl before she is initiated is called a "butu"; after she has been through the "nkole" she becomes a "mwali." No girl is exempt from these loathsome ceremonies, or ever marries till she has been through them. It will be obvious to any one that no young girls can take part in such scenes as these without becoming contaminated, if not wholly corrupted, by them. It is, alas! the time the young girls look forward to with the greatest eargerness, and look back upon with the greatest satisfaction, so terribly low are the ideas of morality in heathen Africa. The "nkole" is also held for boys, who live in booths far apart from the booths of the girls. In most tribes the "nkole" would be, in the case of the boys, the time when they undergo circumcision, but the Nyassa races are almost peculiar in this part of Africa in not practising this rite. Thus for the boys the "nkole" is only a time for dancing and feasting, and for them there are no bodily mutilations. As in the case of the "nkole" for girls, the songs are of a depraved character, and it is a time when all sense of decorum and modesty is abandoned, and the utmost licence prevails. The only way in which we can hope for the girls' "nkole" to be given up is when the children of those who are now children themselves, and whom we are gathering into the Church by baptism, shall be kept back by their Christian parents from undergoing these detestable rites. It must inevitably be a very long time before this degrading "nkole" will wholly give way before the advances of Christanity, for of all native customs that are deep-rooted and ingrained in the life of the people, this, perhaps the very worst of them, stands pre-eminent.

Our steamer, the *Charles Jansen*, starting as a rule every Monday and returning on Friday, makes a weekly trip along the eastern shores of the lake to a distance of about 80 miles, and visits some seven or eight large coast villages which lie to the south of Lukoma. In one of them we have a flourishing school entirely maintained by one of our Zanzibar scholars. In this village lies buried one whose saintly character will be ever lovingly remembered by all who knew him, Charles Jansen, in memory of whom the steamer bears its name. Regular instruction in religions truth is given daily to the men on board the steamer, and we are anxious that she should in every way keep up her position as a veritable *church ship*. She is a missionary and not a trader, and we want to help her to carry out her profession. Hence we even grudge the time that she has to go off her usual trip in order to carry up our stores and letters, and look upon this part of her work as an unavoidable necessity; though it may be confessed that when the good little ship heaves in sight, when we know our letters which we have been waiting for, it may be three or four months, are on board, we are not so ready to think of her long trip as one which has to be regretted!

It is about two years since Lukoma was selected as a station for the Universities' Mission. We are making slow but sure progress at Lukoma. The island probably is a more healthy locality than we could have previously dared to hope to find it; and, as has been seen, many of the necessities of life, if not also some of its luxuries, are to be had for the buying. Milk, eggs, poultry, goats, and fish we have in abundance. Add to these flour, sugar, coffee, and treacle, supplied by Buchanan Brothers, the enterprising missionary-colonists at Zomba, near Blantyre. Our buildings, it is true, are not as yet of a very permanent character; but, such as they are, they are convenient and commodious, though all the material, such as bamboos, poles, and grass, have to be fetched over in canoes from the mainland. We have planted a few of the fruit-trees that flourish on the coast, guavas, limes, and lemons: some young fig-trees also that have been planted this year show signs of taking kindly to the climate and soil. As yet, the tomato is the only vegetable that flourishes, though it should be added that little has as yet been done to prepare the soil for other seeds.

I trust that this brief account of Lukoma may have served to kindle some interest in it in those of my readers who are not already familiar with its principal features, through an acquaintance with the operations of our Central African Mission.

FROM NEWCASTLE TO THE YENESEI.*

(BY A CORRESPONDENT OF "INDUSTRIES.")

[Read to the Members, in the Library, March 20th, 1889, by the Secretary.]

As is now generally known, the attempt on the part of the Phœnix Company to follow up their successful voyage of last year has this year proved an unfortunate one. The stranding of a river steamer on the Yenesei, and a series of delays consequent upon this, prevented the meeting of the Labrador and Phœnix. Had the Labrador alone pushed forward—even had Captain Wiggins received no news at Vardo of the condition of the river steamer—the commercial enterprise would have been a success, and cargoes would have been exchanged as planned. This we learnt only upon our arrival in England, where the news awaited us that the river steamer had proceeded to its destination at the Yenesei mouth, despite all expectations to the contrary.

The Phœnix Company offered a chance to the writer to botanise in Siberia, but unfortunately we were able only to reach the limits of that interesting country, to the extreme north of the Urals. We anchored for a few days off a Russian and Samoyede village, immediately to the south of the Yugor Straits. There we were able at once to see something of the country, and also to learn as to the movements of the drift ice in the Kara Sea. As to the latter, it was late in September when we

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*This paper, and the illustrations are kindly placed at the service of the Society by the proprietors of *Industries*.

pushed forward to inspect the unusual amount of ice that was lying in the south-west of this sea. We found that there was a wide channel of twenty miles or so between the mainland and the drift ice at the time when we entered the Kara Sea, southerly winds having driven the loose pack to the north. We also skirted to the eastward of this mass of drift and found open water, extending doubtless to the Yenesei mouth. A little time before our entrance into the sea, and whilst we were at the anchorage in the Straits, northerly winds, which have apparently been unusually persistent this season, had forced this ice down upon the southern coasts, and completely blocked the passage to sailing ships. Four Norwegian walrus sloops, having no steam to carry them out of their dangerous position, were forced on shore or crushed by the ice which was so driven to the south. It seems probable that if the winds are from the north, just at the time when the floods of water are pouring into the ocean from the Siberian rivers, ice may never be moved out of the deep bay which forms the southern part of this sea. Unless, indeed, south winds are in early summer frequent and strong, there is no chance of this ice disappearing; nor in colder seasons, such as this last has been, it does not appear that the large broken floes will be melted by the warm waters during the short summer, as Nordenskiold suggests is invariably the case. Undoubtedly, it is unusual for ice to remain so entrapped in the almost land-locked south-western portion of the sea; for in most years, as in those when the Swedish professor, or when Wiggins has penetrated to the estuary of the Yenesei, there has been no sign of ice. Yet it is doubtful whether, during this last autumn, the large drifted mass lying against the eastern shores of Waygato Island has ever disappeared. Yet in this exceptional year, walrus sloops had followed the ice to the east of Novaya Zemlya, entering the Kara Sea in July and August. The Labrador entered towards the end of September, and it is probable that she could have passed out at any time during the greater part of October, perhaps even in November. No wonder, however, that the Kara Sea has a bad reputation, when such a really unnecessary disaster was met with by the Norwegian walrus fleet. They had obtained but few walrus, and were returning earlier than often is the case, perhaps being somewhat fearful of the large amount of drift ice in the neighbourhood. Four of these sloops, eager to pass through the Straits, ran in between the drift ice and the mainland with a wind that was slowly but surely driving the mass of ice down upon them, The wind veered more to the north. They were hopelessly beaten in their race to the entrance of the Straits. The ice crushed some, and drove others on shore, the men only escaping in their open boats. These Captain Wiggins took back to Norway, saving them a journey of many hundred miles by sledge, from the Petchora to Lapland, which would have been the only possible way for them to reach their own country at that season of the year. We heard that these vessels were fully insured by some Italian company, giving evidence that such disasters are not common. Yet the occupation of these men cannot be a lucrative one, inasmuch as year by year the walrus is met with less plentifully. Perhaps they are driven further to the east, where Nordenskiold asserts they are more abundant; certainly, fourteen years ago Wiggins reported vast quantities of these animals where now they were nearly exterminated, or from other causes absent.

As only a few travellers have described the north of Siberia, it is well that we should clearly understand as to the nature of the higher latitudes of this vast and interesting country. The accounts which now reach us as to the riches of the south—where the minerals and the rich soils might be made a most productive source of wealth—have no reference to vast extents of dreary land in the north. Nordenskiold tells us that his Swedes cried out with envy as they passed up the Yenesei, because "of the rich lands God had given to the Russians." Wiggins, Seebohm, and Sulivan all speak of the luxuriance of the vegetation, and of the substantial wealth and civilisation of the merchants at Yeneseisk and elsewhere along the great central waterway. They tell us of the almost palatial residences, of the introduction of the telephone, and the electric light in houses and shops. But these are all details with reference to the warmer and richer south, where, although the winter is very severe, yet the summer heat allows of a quick growth of crops, and the more mountainous country is rich in minerals. North of this fertile region is a forest zone, where, although excellent timber has been reported by Wiggins, it is probable that such is not common, owing to the severity of the winter's cold. Following upon this, and extending from the coast for many hundreds of miles, is a dreary expanse of low marsh land covered with the coarsest grasses, or with a succession of almost endless pools and small lakes.

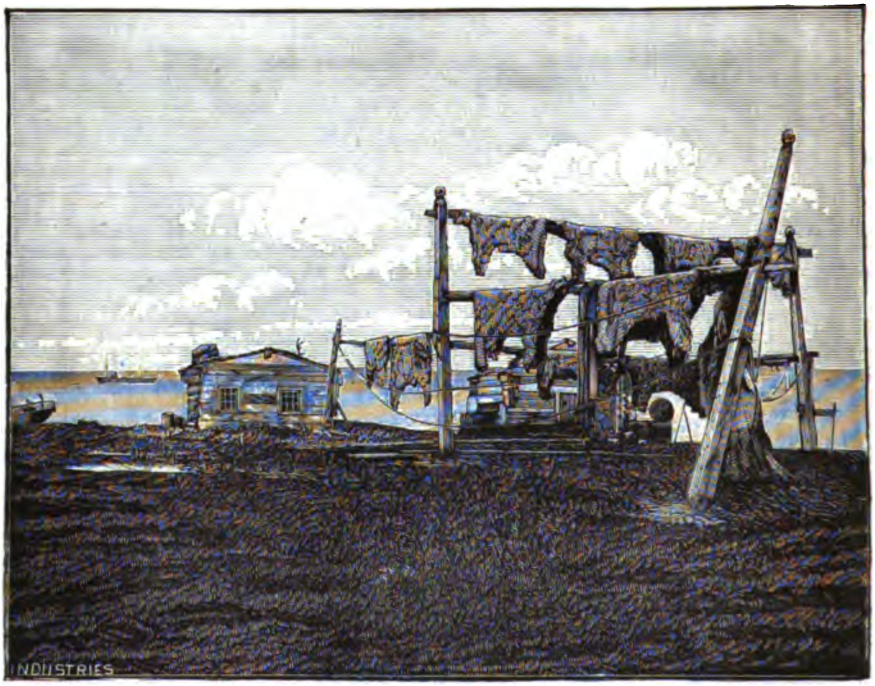

FIG. 1.—Hut of the Merchant Charborora: Bear Skins drying.

This is the "tundra" region, and it may be here remarked that the climate over the great extent of tundra is during the two months of summer probably warmer than that of the highlands of Scotland. Certainly there is no great amount of cold such as is to be met with in the same latitudes in the middle of Greenland, where high snow-covered land and the absence of the Gulf Stream make a vast difference in the temperature and the look of the country. The marshy, low-lying extents of tundra are never traversed even by the nomads who seek pasturage for their very considerable herds of reindeer. In a few places, as in the river valleys and along the coast, or as in the Yalmal land, excellent pasturage is to be found, and the country is more habitable. Although the Yalmal peninsula lying to the west of the Obb estuary is further north than the whole of the tundra region from the Urals to the Yenesei, yet its vegetation is much more rich and luxuriant, a fact to be explained in part, perhaps, by reason of the sandy soil, which does not hold so excessive and injurious a quantity of water upon the melting of the snows. Along the banks of the magnificent rivers and in places along the northern coasts, there are settlements inhabited throughout the year; but it was evident, from the preparations of the Samoyedes and Russians at the village of the Yugor Straits, that most in that small settlement would migrate southwards when once the winter set in.

The Russians had a sloop in readiness to take them in October back to the Petchora. There were, perhaps, ten of these merchants, who, since the month of May, had been collecting skins and furs from the natives, which they would sell at Petchora or Archangel in the winter. The settlement (Chabarova) has lately been rendered more permanent through the munificence of the gold mine owner, Sibirakoff, the wealthy Russian, who aided Wiggins in his expedition with the Thames and who has now succeeded in inducing the Russian Government to aid him in the construction of a railway from the Petchora to the Obb, over the northern spurs of the Urals. Sibirakoff has a large store at the village which he uses as a depôt in his trade, which is carried on at present by steamers to the Obb. These steamers are excellent in every way—perfect models of what Arctic-going vessels should be, with their protected wooden hulls, their full rig and powerful engines. This merchant has also presented a church to the village, the wood for which was sawn and put together in Archangel;

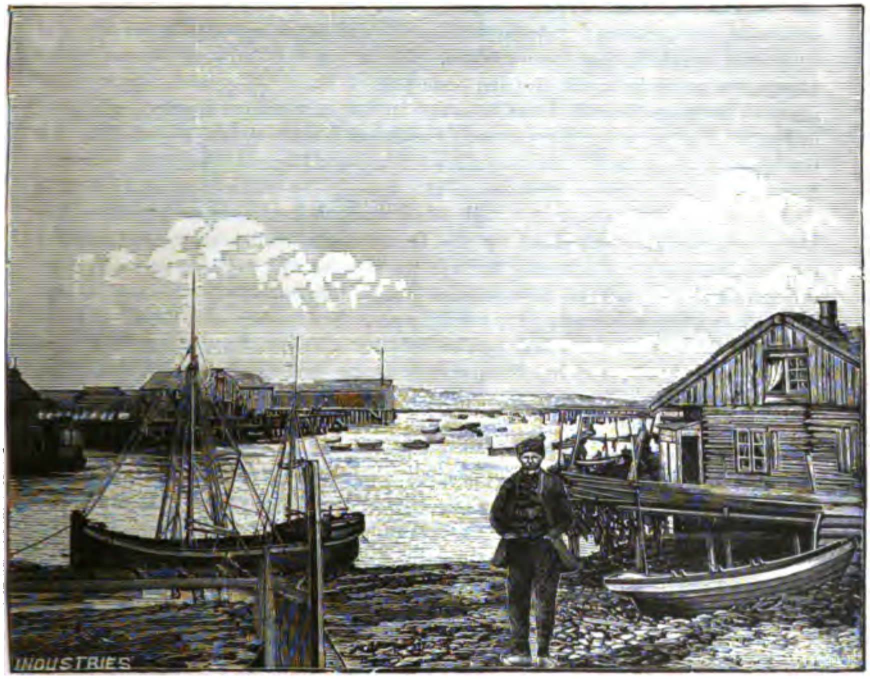

FIG. 2.—Harbour of Vardö

whether or not it serves to protect the store I cannot state. A characteristic feature of the village was to be seen in the numerous skins of bears, which had been shot during the previous winter; these were drying on poles placed about the log huts of the Russians in the manner shown in the illustration Fig. 1. We were surprised at the price asked for these skins, £3 and £4 being their common value, or almost the same price as would be asked in London for the cured article. For furs of the brown and white fox they demanded a rouble and a half. Skins of reindeer might be purchased for two to three roubles, or bartered for sheath knives, which were about the only manufactured articles these men cared to obtain from us. Gunpowder and liquor, doubtless, they would have liked in any quantity; and it says something for the wisdom of the Russian Government that they have prohibited the barter of the latter to these northern races. The people were a dirty and low-statured race, as might be expected; they are said to rank lowest among all the Arctic races contrasting, for instance, very unfavourably with the Lapps as regards the degree of civilisation to which they have attained. On our way to Siberia, as on our return voyage, we called in at the thriving little port of Vardö (Wardoes), situate on an island at the extreme north-east of Scandinavia, and of which an illustration is given in Fig. 2. This belongs to Norway and Sweden, but it is impossible to tell how soon the Russians may extend their dominions further into Lapland, that they may have North Sea ports for naval purposes. The connection by mail service every week to Archangel and the Murman ports, and every week to Bergen, is an excellent one. These mail steamers, subsidised by the Governments, render easy the trade of the merchants along the coast. Perhaps the steamer will wait for several hours, taking in casks of whale oil from a station among the Loffodens, or it may be that dried fish or guano which will be the chief cargo. Nor do they omit the most insignificant place where fishing is a regular industry. Vardö is essentially a fishing station; we, however, saw but little of this during our visit in August last. The excessive population of seven thousand had become reduced to the normal one of under fifteen hundred. The harbour, though well filled with craft of one sort or another, was not crowded, as it is in spring, with between one and two hundred fishing sloops. When we arrived there were in addition to the large mail steamers some score or more of Russian vessels, with the last cargoes of dried or salted fish; perhaps a walrus sloop early returned from the season's hunting off Novaya Zemlya or Spitzbergen; various other vessels, some with timber or coals, a Leith steamer among them, and some of the small whaling steamers.

Concrete piers, in course of erection, showing signs of the winter's frost above the water mark, and diving and dredging operations in connection with the harbour works, all were signs of a commercial activity we had not expected to see. Of course, when we landed at Vardö, the merchants—residents mostly for but half the year—and the magistrates, welcomed Captain Wiggins very heartily; they recognised that if trade, in however small a way, were established with Siberia, by the ocean and river route, Vardö would be the town most suitably situated to serve as a midway depôt, or as a base for communication with home. Their telegraph system is excellent, messages costing less than 2½d. per word. Some of the more sanguine hope yet to see railway communication with the south. This, however, seems likely to remain as an improbability for many years to come.

Next to the trade in fish, of which we saw the last signs in the long rows of dried cod heads, to be used in the preparation of guano, and in the great vats filled with decomposing livers of cod, &c., from which a coarse species of oil is extracted, the whaling industry ranks in importance. There are two or three boiling houses on the island, to which the whales captured, sometimes fifty miles away, are towed. There they are beached between water marks. Immediately it is possible, men set to work to cut off large strips of blubber, which are hauled up inclined planes by machinery, and boiled down until fit to be casked as oil. The whalebone is not present in much quantity in the "rorqual," which is the species commonly obtained off the Norwegian coast; it is quickly cut off, and the carcase is perhaps by next tide towed away to the guano works. Here the machinery is such that a carcase can be cut up and turned out as guano, of a kind, in the course of twenty-four hours. At times these carcases are picked up at sea, the blubber mostly decomposed; they are, however, never left, but yield considerable profit, if not on account of the oil to be extracted, because of their value for guano. This is a source of wealth denied to the whalers of the Davis Straits, where the carcase is always rejected, but, where, on the other hand, the whalebone is much more plentiful. The two systems are, of course, different in Norway and in Greenland. In place of the large whaling vessels, with their vats on board, the Norwegians have active little steamers, capable of running at about twelve knots per hour. In these they chase the whales, with a man at the masthead to telegraph to the engineers and to the man at the wheel. In the bows is placed a large harpoon gun, moved at will from side to side, and fired with about as much ease as a pistol. The aim is never attempted at a distance of over 30 or 40 yards, if so much. We saw one of these little steamers turning from side to side, and moving with astonishing rapidity in chase of a whale, just off the North Cape. Later we were shown the gun and harpoons, the size of the latter being remarkable. I attempted to take a photograph of two of these after they had been recovered from the whale. The size of the cable atttached to them when fired gives some indication as to the comparative size of the harpoon. When they strike the whale, an explosive mixture in the shaft of the harpoon is ignited, commonly killing the whale at once, and at the same time fastening the harpoon with more security in the carcase. Three stout barbs, each about a foot in length, are by this thrown out from the shaft, forming a secure anchor as it were in the body of the prize.

I believe that the whales brought to Vardö are often quoted in London a few hours after their arrival. A whale is spoken of as a "three-inch" or "four-inch" whale, according to the thickness of the layer of blubber—a kind of dimension peculiarly ludicrous to the uninitiated. They may fetch £150 to £200 each; but as in a good season 80, or even 150, of these may be captured, there is a considerable margin for profits. During the last two years, however, this industry has not flourished; it is probable that the whales have been driven further from the coasts than the whalers care to pursue them, as there is always a possibility that the whale must be abandoned in a storm. We saw more whales, indeed, when 100 miles or more from the coast of Norway, and distant two days' voyage from the North Cape, on our way to the east. Indeed, the merchants in Vardö appeared uneasy lest they had arrived at a chronic condition of bad times. They have petitioned Government for an inquiry as to the probable causes of the failure in cod fishing, the Government sending as an inspector a no less competent naturalist than Professor Sais to inquire into the matter. There is certainly no question as to the riches of those seas in the amount of the fish they contain; it is a question, however, as to why there is less abundance than in former years. It has been suggested that the whaling has something to do with this—but the connection is not very apparent.

We saw nothing of the shark hunting, said to be another profitable industry of the north and north-west coasts of Scandinavia. Not uncommonly did we see cat-fish and the curious leather made from their skin; and also the abodes of the eider duck, which bird is heavily protected by Government—as one of the lesser sources of wealth. We also saw signs of the trade in skins of reindeer carried on with the Lapps both at

Vardö and Tromsö, but it is improbable that this trade is an extensive one. Tromsö we found to be a busy little place, whilst at the same time it rejoices in the title of the "Paris of the North." Many of the walrus hunters had returned from the Spitzbergen hunting. The whalers and fish merchants living there throughout the year had prepared for the severe northern winter, which had shown signs of its approach when we left. The population is more than twice that of Vardö. It was of interest to notice that the limit of trees extended slightly further north than Tromsö, the birch, not the pine, being the most frequent.

THE EAST AFRICAN QUESTION.

(Letter from the Rev. W. C. Porter, M.A., a Life Member of the Society, Universities Mission, Newala.)

January 17th, 1889.

Dear Sir,—I hardly know how to begin a letter when I have been silent so long, and you may have thought that I ought to have found something interesting to write and I'm not sure whether I have ever acknowledged what you have sent me. But on the other hand, people must be almost nauseated with the subject of East Central Africa, and anything fresh may very likely be foolish too. However, it is a wide order, and there are very likely differences in details in different parts, and any small contribution to the great question how to treat it, and cure its one monstrous evil, may not be despised, or, if mistaken, help out the true solution. First, then, as to our own present condition in present circumstances. It rather resembles on watch against a leopard and being set upon by a lion. We have been accustomed to looking for danger and trouble from the west, and now rises up this from the east, which at the same time may aggravate the evil from the west by provoking Arab connection among the chiefs near Nyassa, and even the Magwangwaras themselves, who depend a good deal upon the coast demand for slaves, for getting rid of their captives and getting their cloth. Again, as has been forcibly represented, the prohibition of introduction of arms and ammunition is a terrible blow to natives about here dependent upon such weapons for the protection against spears, shields, and knobkerries of their worst enemies. Our chief and only real trouble, through this emeute on the coast and the blockade, hitherto, has been the great danger in which one of our coast parties were in from the Arabs at Lindi, who threatened their lives. They were rescued by the magnanimous conduct of three Arabs—one of whom is an old acquaintance of ours, at whose house on the upper part of Lindi Creek we have often stayed. Another party since then has gone and returned safely. Another favourable circumstance has been the refusal of the strong chief Machemba (who defeated the Magwangwaras in May last) to accept the overtures of the Arabs to make common cause with them. As he lives on the route our coast parties take now, and only about two days from Lindi, and a day and a half from one of our mission stations, his friendship is of the utmost importance, and we must hope that he will keep true to this policy. It is a great comfort to hear that the mail steamer may very likely call at Lindi for some months longer at any rate. Of course, we don't know what at any time may be the next turn in events. Severe measures by the Germans at Chioinje Kilwa might send Arabs there in great wrath to Lindi, to retaliate at the latter on anyone connected with Europeans. We may also have trouble from caravans from the interior, from chiefs under Arab or coast influence—as, especially, Makanjila, at whose town Mr. Johnson and the Vice-

Consul were so badly treated, and whose caravans have a bad character. If, as has been suggested, Portugal joins the blockade, we should be shut in on the south-east too. If not, we may be able to make use—if Lindi is closed to us—of Msimbwa, or some other port south of the Rovuma, and thus open communication by Dhow with the mail steamer at Ibo or Mosambique. I should like a trip to the latter place that way. The Portuguese are so weak, and so despised and hated by the natives, and also so half-hearted about suppression of the slave trade—if not favourable to it—that their share in the blockade would probably be a mere farce. Anyhow, here we are very much in *status quo,* waiting in true African fashion for the next news, and ready to hear that, as usual in these parts, the unexpected has come to pass, only one learns not to expect, only be ready for any eventuality. And now, if one may venture a remark on the policy which has caused us all this distress and anxiety, and may cause something more sooner or later—not, of course, the conduct of the Germans, on that point there can be no question for those who regard the best interests of the natives, and who wish to pay due respect and do justice to all men, whatever their creed or hereditary wrongmindedness, but the policy of blockade, with the view of really destroying the slave trade. If a sufficient number of ships could be employed, if a long enough line of coast could be covered, if the blockade could be kept up a long enough time, if the outlets in the interior to the north and south could be closed, if the slave trade depended only on the traffic over the ocean—then the blockade might destroy it, would probably do so. But as none of these conditions are likely, then it is, at least, a very imperfect step to that great end, and a measure the advantage of which (if employed by itself) is very much counterbalanced by the evils too probably resulting from it, such as—(1) the great hindrance caused to efforts—philanthropic, scientific, mercantile, missionary—being made in the interior to improve the condition of the people, the hindrance, *i.e.*, which will arise from the increased enmity of the Arabs and others profitting by the slave trade ; (2) the increased horror of a longer journey by roundabout ways to reach the coast, where unguarded with greater cruelties on account of the exasperation of the owners ; (3) the establishment in greater force of Arab centres in the interior, on the great lakes and rivers, and greater influence with the more powerful chiefs ; (4) the destruction of the legitimate trade on the coast—ivory, tobacco, &c. ; (5) the depriving the natives of their means of defence against invasion, and on journeys against enemies human and animal. Really, to check the slave trade, and cut, once and for ever, the root of it, more than blockade on the coast is wanted ; for the idea of getting another man or woman to be under him, in one of the many degrees of slavery, is widely and deeply ingrained in the African mind. The raiding for, or kidnapping, old or young seems to have become the recognised employment and amusement of the more powerful. The endless and complicated system of retaliation for bygone—ever so far bygone—offences of all kinds continually gives a reason and excuse for man-stealing. The contempt by Arabs, and those who want to imitate them for agricultural or pastoral or manufacturing employment, creates a demand for slaves. Surely all this wants curing, if the slave trade is really to be swept off the face of East Central Africa. And how are these evils at the root of the slave trade to be cured but by such efforts, in the heart of the country, as the Scotch Trading Company—the agricultural undertaking on Mount Zomba of the Brothers Buchanan—the opening up the country and training the natives in proper use of their powers by such as the Nyassa and Tanganyika Road. The grand attempt at establishing a proper civilised government, *with the consent and through the agency of the people themselves,* as that of Emin Pasha ; * and, perhaps, it should be added, the

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* Let the Germans on the coast imitate him (their compatriot) in his way of colonising, and all success to them !

abortive plan of the Belgian (?) Company, on the east shore of the Tanganyika, at Karema (?), and the missionary establishments throughout the land, which, besides their main object, incidentally I will venture to say further, the above-mentioned methods of raising the character and turning in a right direction the energies (such as there are) of the people themselves, and so slowly, but effectually, healing the constitutional evils, which do so much to support, and encourage, and invite the slave trade, even if first introduced from without. Of course, at the same time, let the traffic on the sea be prevented as much as possible, as formerly, without running the risk of causing other evils on the mainland. Allusion has been made chiefly to the interior, but, remember, that (unless I am greatly mistaken) a great many slaves are disposed of along the coast. The conclusion of the matter seems to be this. If the good feeling of Europe is being really aroused to put an end effectually to this terrible curse of Africa, let it use no half measures, but make a crusade philanthropic, scientific, mercantile, missionary, on the interior, as well as restrictive on the coast, with a real purpose (and so most carefully avoiding the introduction of gin, &c.) of ameliorating our fellow-creatures, who have—as those who have lived some time among them know—such capacity for goodness and greatness. What world of good in this direction might be done by such an establishment on (to speak of what, to some extent, one knows) the Mtangwi (Mtonge) Hills, about 100 miles east of one of the headquarters of the Mangwangwaras (Sonjelas)—a kind of lesser Matasi, seen at a little distance, with plenty of water at the base, and near an old path inland from the coast—and how many such spots might be found as near, or at, the Majaje Hills, or other hills near the Rovuma. I will not try your patience any more. Possibly at all this you would, if a Makua, take a pinch of dust from the ground and throw it over your right ear, *i.e.*, "it's all a lie," or "what humbug!" Kimakua "wota" (pronounced *water*). You see we are in the midst of the rainy season, which this year has come in full force at the beginning, and the warm intervals between the downpours are debilitating.—I am, yours very truly,
W. C. PORTER.

THE SLAVE TRADE IN CENTRAL AFRICA.

The following letter to the *Times* from the Rev. A. M. MACKAY, C.M.S., is of interest:—

Victoria Nyanza, January, 1889.

In the last number of the *Times* to hand in this distant region (dated October 5, 1888), I have read with much satisfaction Commander Cameron's proposal to establish a British association which shall maintain an anti-slavery cordon along the line of the great lakes of Central Africa. The interest which is now being awakened in Europe regarding Central Africa affords to those of us who are familiar with the atrocities daily perpetrated in this continent some hope of definite steps being at last taken to put an end to these horrors. It is so difficult to write anything sober on this gigantic evil without being accused of exaggeration, although exaggeration is scarcely possible, that I shall confine myself to an examination of Commander Cameron's scheme, with a view to show how far it will prove successful, and where its failure will chiefly lie.

In 1871 Livingstone wrote: "The evils inflicted by these Arabs are enormous, but probably not greater than the people inflict on each other." This is especially true as regards Buganda and Bunyoro. These countries have generally large armies in the field, in one direction or another, devastating whole regions of their inhabitants. The Arabs, as a rule, do not join these expeditions organised for wholesale murder, but they supply the guns and the powder, and receive in payment women, children, and ivory procured in the raids. The demand for slaves in Buganda itself is very great, it being only the surplus which is carried off by the Arabs. Every year some 2,000 slaves, as nearly as I can estimate, are purchased by Arabs, and conveyed by water from Buganda to Usukuma, where the march to the coast begins. It will be no light undertaking to stop this trade on the water, but granting that it can be done, what means are to be employed to prevent the tenfold greater loss of life and liberty in the countries raided on by the Buganda?

Arabs are obsequious enough in the presence of force greater than their own, but in the interior of Africa they have found that by making a firm stand they can defend their interests, however unlawful, against Europeans who oppose them not for their own interest, but as hirelings engaged on philanthropic work which has hitherto not been carried on with determined whole-heartedness. Take a few instances. On the Upper Nile the Arab slavers have carried the day against a hesitating English army, grudgingly sent by a ridiculous route and hurriedly withdrawn at the moment of victory. On the Upper Congo the poorly-manned station of Stanley Falls was easily taken by a gang of slave-hunters, and one of the greatest slave-hunters on earth is now placed in charge, where he is subsidised by money from the Congo State—a Power pledged by the Berlin Conference "to employ every means that it can to put an end to the trade, and to punish those who engage in it." On the Nyassa two or three slavers have wellnigh ousted the representatives of missions and commerce there. Finally, in East Africa all the coast acquired by Germany has fallen an easy prey to a few desperadoes and their allies. Nothing of all this would have been attempted had the Arabs not seen the feebleness of the force opposed to them in every quarter, and the readiness with which Christian effort is nowadays abandoned on the first reverse. Even in the waters of Zanzibar the nefarious slave traffic is pursued with almost complete impunity, because, as one of your correspondents (Mr. Highton, of the Universities Mission) writes, the English cruising boats are small, slow sailing, and of an obsolete type.

How are the Arabs in the Soudan, on the Upper Congo, on Nyassa, and on the Zanzibar coast, or the kings of Buganda and Bunyoro able to carry on this organised system of slaughter and slave-catching? It is only because of the thrice blind policy of allowing them to procure *ad libitum* supplies of gunpowder and guns. It is Europe, and, I hesitate not to say, especially England, that is yearly supplying these men-killers with the means whereby they carry on their deadly work. Men talk of free trade, but there can and must be no free trade in instruments of rapine and murder.

Here we have the astounding phenomenon of a continent bleeding at every pore, and of a feeble, ineffective effort made at the coast to check the export of slaves, while at the same time a few petty European merchants in Zanzibar are pouring into the interior, unchecked, arms and ammunition, without which not a single raid could be made by Arab or Buganda. It is like one man plugging up the outlet of a deep-seated abscess while others are saturating the blood of the patient with poison. Tribe is stimulated to annihilate tribe, and Arab encouraged to prey upon all, merely by their being allowed as much as they want of manslaying material. If this is not a policy of *dementia* I know not where madness is to be found. For years we have been sowing this bitter seed, and now we mourn as we begin at length to reap the bitter fruit in assassination and defiance. The British vessels which bring out missionaries and Bibles to evangelise Africa, bring also, and in far greater number, Enfields and breechloaders which convert the continent into a hell. The Church Missionary Society has already spent over £150,000 within the last dozen years in the endeavour to introduce Christianity into East Equatorial Africa; but all their labour and expenditure is rendered well-nigh fruitless by the continual wars and intrigues carried on upon the strength of the guns and gunpowder supplied by Christian traders, who are too cowardly to venture inland themselves, for their wares would probably cause their assassination. The murder of Herr Giesicke in Tipu Tip's courtyard at Unyanyembe was not unexpected. Again and again the Buganda have confessed to me that it is the guns which enable them to carry on the work of "killing" the neighbouring countries. Livingstone, too, writes in his "Last Journals" (vol. II., p. 57): "If spears alone were used, the Manyuema would be considered brave, for they fear no one, though he has many spears. They tell us truly that were it not for our guns not one of us would return to our own country."

Here, then, lies the weak point in Commander Cameron's otherwise laudable scheme. Hundreds of thousands of pounds sterling may be expended in maintaining gunboats on the Nyassa, Tanganyika, and the two Nyanzas, but if the gunpowder traders are to be still left free to supply their bloody tools, no triple cordon of gallant officers will ever be able to put a stop to slave-hunting in Central Africa. Commander Cameron is right in not recommending that the Government should take in hand the work of forcibly checking slave raids in the interior. Even in these days of State-socialism, I believe that an independent association of determined men will more effectively do the work. But, whether the association be international or exclusively British, it must in the first place secure the sympathy and support of the principal Governments concerned. England and Germany are in East Africa. France protects Comoro and Madagascar. Belgium is responsible for the Congo State, while Portugal claims vast regions in both East and West. All these five Governments must be asked to pass and enforce stringent resolutions forbiding the importation of arms and ammunition. A cordon of sufficient strength, such as Commander Cameron suggests, will do the rest; but without that security no such cordon will effect one particle of good. The work to be done is, therefore, threefold—viz., (1) stop the influx of arms and ammunition; (2) increase the vigilance at the coast by more and better cruisers; (3) establish the cordon of police on the upper waters of the great rivers.

As long as the Arab remains in Africa he will trade in slaves, and in spite of his doing so he will be regarded by the natives as a friend, simply because he trades in other things as well, and there is a demand for these. To rid Africa of his presence, we have only to take the trade out of his hands. If Europeans succeed in supplying the natives with calico and other goods of lawful barter, they will entirely supplant the Arabs, who will retire in vast numbers to their own country. But to do this the barbarous and inhuman method of employing porters to carry loads must be abandoned. No European merchant can employ labour of that kind, and hope at a profit to undersell the Arab merchant. If he transports his goods by animal power, on the backs of elephants or buffaloes, or preferably in the wagons hauled by these, he will without question succeed in securing all the ivory trade, because he will then be able to give more cloth for a tusk. But be it remembered that millions of natives in Central Africa demand cloth, but have no ivory wherewith to buy. The Arab accepts a slave from a poor man for the little cloth he wants, but what can the European accept in exchange? Produce will not pay the expense of freight to the coast, even by wagons drawn by elephants. Hides, tobacco, cotton, and coffee will be offered for sale in many parts, but will be found not worth the carriage over a hundred miles. The one means which will alone succeed will be the construction of rough tramways to the great lakes and other centres of dense population. These, with branch tracks for elephant wagons as feeders, will enable traders to exchange calico for country produce, and will effect the threefold purpose of supplanting the Arab entirely, of developing the resources of the country, and of promoting internal peace, for the natives will then busy themselves with growing whatever they can get a fair price for, instead of fighting with one another as hitherto. Then will come an end to slave-hunting by the Arab; for if this proposal is carried out he will have no powder or guns wherewith to shoot down helpless tribes; and when other trade is also taken out of his hands he will disappear altogether. Already in Zanzibar all the trade has passed into the hands of Indians, which demonstrates the inability of the Arab to compete on fair terms with other traders. Raiding tribes, like Buganda, will also be easily controlled, for a European trading company can insist, as the first condition of their bringing supplies, that murderous raids on neighbouring countries shall cease forthwith.

The British Association, with its anti-gunpowder and anti-slavery cordon, will prove a valuable police force in preventing the smuggling of either ammunition or slaves, only it must be strong enough, even from the first, not merely to provoke resistance, but to overawe all attempts at defying its authority. The Arabs are now becoming desperate, and no feeble measures dare be used to oppose them; only such as will insure success. Those who will hold the ammunition will hold the key to the whole interior for good or for evil. Permission may be given to companies, but by no means to private traders, to sell a limited quantity to chiefs who undertake to keep the peace. But may there be no continuance of the present infatuation of one party trying to punish slavers, and another all the while being allowed to furnish these same slavers with an unlimited supply of the instruments of their deadly traffic.

I have quoted the opinion of Livingstone on the question of supplying slavers with ammunition. Let me conclude with the words of another authority on Central Africa. In one of the last letters I have from Dr. Emin Pasha, dated Wadelai, August 25, 1887, he writes: "The *conditio sine quâ non* for the peace and prosperity of these countries is to stop the importation of firearms, ammunition, and powder. The English and German Governments should agree on this step, and punish with relentless severity offenders against their proscription. Mwanga and Kabarega would very quickly come to terms on seeing their powder stores empty."

A Little-known Race.—It is supposed that the East Greenland people originally came from Norway, and were wrecked. Their food is raw meat, oil, and blood; nothing else. Once in a great while a mother warms a bone for a baby, but otherwise nothing they eat is ever cooked. They often get blind from looking at the snow, and suffer much with their eyes. They get out of their heads with pain. In "twilight" they have starlight, and even in the night season it is light enough to get about. They line and carpet their huts with furs. When they sleep they roll up in furs. If a man is an old bachelor he sews his fur up like a sack for his bed, with but one end open. He crawls into it head first, and sleeps. When he awakes he crawls out of it backward. There is no difference in station or quality, save in one particular. The man who owns a flint is the rich man. The one who does not is the poor man. The flint and walrus tusk are the only means of lighting the fires. Those who do not have them must borrow. If they get out of food, fire, or clothes, they borrow from their neighbours, who cheerfully lend. They are the most contented people in the world. They get flints from the ocean when the ice breaks up. The man who wants a wife must steal her. He first begins his courting by going to the house of his girl to borrow from the old people. After it has become noticeable that he comes often the family begin to watch, and keep guard over the girl; not that they object to him, but because they say if he will be a good husband let him show his skill by stealing her away without our knowing it. If he succeeds in getting the girl out of the hut without anyone knowing it, well and good; she is his wife. If he tries and is caught, he is killed, and the girl looks on and laughs. She does not want such a bungling husband. No Greenlander ever tells a lie. The children are punished cruelly and peremptorily, by having a bone heated till the fat boils out of it and their flesh burned by it. They never repeat an offence after punishment. They do not run around like our children, but are obliged to sit still with their arms crossed tightly in front. This shortens the arms, especially of the girls.

PROCEEDINGS OF THE SOCIETY

FROM JANUARY 1st TO MARCH 31st, 1889.

EIGHTY-SECOND MEETING

Of the Society, held in the Library, January 16th, 1889, at 7-30 p.m.
Mr. J. C. Blake in the chair.

The minutes of meeting held December 12th, 1888 (81st), were read and approved. Nominations of new members were announced.

The following paper by Mr. Holt S. Hallett, M.Inst.C.E., &c., was read by the Secretary:—

ON THE RIVAL ROUTES TO CHINA.

(For Map see p. 145, Vol. I., and p. 141, Vol. III.)

In criticising a pamphlet entitled "Indo-Burma-China Railway Connections, a Pressing Necessity," printed by W. Blackwood and Sons, the *Rangoon Gazette*, in the course of a leading article headed "Lions in the Path," in its issue of October 19, 1888, remarks that "It will be time enough when Siam asks us to guarantee her against foreign aggression, before that objection is brought forward as an obstacle in the construction of a line to or in Siam. The construction of a line from Bangkok to her northernmost frontier, or, in other words, to the Chinese frontier, would contribute greatly to that country's prosperity, while it would undoubtedly open out the country to British commerce in a way that can hardly be dreamt of now. Experience has shown that wherever a line of railway is laid, there, along its whole extent, towns and villages spring up. Vast tracts of land are laid under cultivation where once only a howling wilderness or dismal swamps existed. The province of Tenesserim, a most fertile but much-neglected portion of Burma, would once more become prosperous under the influence of even one railway; and if that railway were between Maulmain and Siam, the glories of our sister port, converted once more into an emporium, and into a distributing medium for Anglo-China-Siamese commerce, might once more revive."

The article goes on to state that "The idea of a railway to the Chinese frontier, *via* Bhamo, which the writer of the pamphlet referred to advocates in preference to the Colquhoun-Hallett project, because it lies within our own territory, is plausible rather than practicable, for the reason that a long caravan journey is involved over a hilly country, which all travellers have agreed in declaring to be a barrier to anything like a development of an important trade. A railway between Bhamo and Mogoung (to connect Bhamo with Mandalay) or Manwyne—if such be feasible, which we doubt—might aid greatly to develop the resources of those parts of the country; but it would not much help in tapping the wealth of Western China. A line, on the other hand, from Maulmain *via* Zimmé to Ssumao or Esmok, which Hallett has by his surveys shown to be quite practicable, would act like an artery; while developing the resources, mineral and agricultural, of all the regions it traverses, it would enable us to throw British goods right into the interior and bring back in return the produce of Siam and China for shipment at Maulmain. We may not reap immediate results; but three years at the most would suffice to realise all that we anticipate."

Such is the opinion in Burma in connection with the rival schemes. Since 1881, Mr. Colquhoun and I have constantly advocated not merely the connection of Burma with Siam and China by railway, but the extension of the line from Rangoon through Mandalay to Bhamo as an important section of our projected Indo-Burmese Railway. In 1882 I advocated this latter scheme before the British Association; in December, 1886, before the Royal Geographical Society; in January, 1887, before the Ipswich Chamber of Commerce, and in the next month before the Society of Arts. Far from opposing the suggestion of a railway to Bhamo, we have done all in our power to keep it before the public; but we have done this because we knew that Bhamo was the commercial port of the Chinese Shan States, which lie to the west of the Salween river, and not because we considered the railway would possibly draw the trade of Central and Eastern Yunnan. Even Tali-Fu, which lies only twenty-five days' journey to the east of Bhamo and forty days from Rangoon, is separated from Bhamo by such alpine country that it draws its goods from Canton—a distance of eighty-one days' journey. Only the other day I was assured by Major Adamson, who has for long been in charge of the Bhamo district, that the trade of Bhamo was nearly entirely with the Chinese Shan States, and that all thought of connecting even Bhamo with Mandalay by railway had been given up owing to the difficulties encountered on the various routes leading to it from Mandalay and Mogoung. The trade route from Bhamo to Yunnan-Fu, along which Mr. Gordon proposed carrying a railway, is thus remarked upon by Mr. Colbourne Baber, of our Chinese Consular Service, who accompanied the Grosvenor Mission in 1876, and surveyed and levelled the route: "The trade route from Yunnan-Fu to Teng-yuch (or Momein, the frontier fort of China with the Chinese Shan States) is the worst possible route with the least conceivable trade." Again, he says: "I do not mean that it is absolutely impossible to construct a railway. By piercing half-a-dozen Mont Cenis tunnels and erecting a few Menai bridges, the road from Burma to Yunnan-Fu could doubtless be much improved."

I will now take Sir Charles Bernard's single objection to our proposed Burma-Siam-China Railway, which was made by him at a meeting of the Scottish Geographical Society in November, 1887, and quoted by "Old Arakan" in his pamphlet. Sir Charles Bernard said: "They (Messrs. Colquhoun and Hallett) advocated a route through Siam and the Eastern Shan States into the extreme south of the Yunnan province, and advised that a railway by that route should be guaranteed by the British Government. So far as *his own opinion* went, however, he should think it very doubtful whether the British Government could take upon itself to guarantee and protect a railway which passed for a considerable portion of its length through a foreign country—Siam. Siam would probably say there was only one condition upon which she would permit the British Government to make, guarantee, and protect a railway through her territory—namely, that Britain should guarantee the whole of the Siamese empire from all and every enemy whatsoever." In our "Report on the Railway Connection of Burma and China," under the head of "Methods of Construction," Mr. Colquhoun and I stated: "There are two methods of construction available: (1) State construction; (2) Private company under guarantee. Under the first the British and Siamese Governments would construct their respective portions. But in our opinion it will be found necessary to adopt the guarantee system. Our Government should guarantee the whole through line, making the necessary arrangements with the Siamese Government for refund upon the portions within Siamese territory." Our reasons for the latter statements were that we thought it would be better for traffic to have the two lines under the same management, and we knew that syndicates were asking 7 per cent guarantee from the Siamese Government, and would certainly not require more than 4 per cent from the British Government. If our proposals were accepted, and the Siamese had determined to guarantee, instead of construct, the line, they would thus have been saved nearly half the cost of the guarantee. But the objection of Sir Charles Bernard is entirely dispelled by the Siamese Government taking the construction of their railways entirely in their own hands. In March, 1888, four months after Sir Charles Bernard's lecture, Sir Andrew Clarke arranged with the King of Siam for surveys and estimates of the branch from Raheng to Bangkok, proposed by us, as well as for the portion of our through line from Raheng to Kiang Hsen, the Siamese frontier-port on the boundary of the British Shan States that lie to the east of the Salween river. The remaining portions of our proposed railway to China lie entirely in British territory, and would have to be constructed or guaranteed by the Government of India. There can, therefore, be no political objection remaining to the construction of the railways from Maulmain to Bangkok and China. When passing through Rangoon, in January, 1885, Sir Charles Bernard told me that Mr. Satow, our Minister in Siam, had written to him that "in his opinion Siam would be ready to carry out its part of the projected railways if the Government of India expressed its willingness to connect the two countries by railway." It now appears that whether the Government of India is willing to connect the intended Siamese lines with Maulmain or not, the Siamese are bent in carrying out their part of the projected railways. Sir Charles Bernard, in his lecture, went on to state that: "The ancient route of traffic between Burma and China was by Bhamo and the Irrawaddi valley. We ought to make the most of that route, and exhaust its possibilities, before we committed ourselves to creating another and a *wholly new route.* No doubt the lofty passes on the old path between Bhamo were most serious obstacles to a railway on that route. But it might be possible to find much easier gradients if the Shweli Valley, and other valleys leading towards Sunningfoo (Shunning Fu), instead of to Talifoo, were examined. A thorough examination of the country would take *one or two seasons.*" There is no reason that I know of for saying that the Maulmain route to China is "a wholly new route," or to imply that it is any less ancient than that *via* Bhamo. The Maulmain route has been traversed for centuries by caravans from China to Lower Burma, and even now, when steamers are plying for nine hundred miles up the Irrawaddi river to Bhamo, large bodies of Chinese from Yunnan proceed yearly *via* Kiang Hai and Zimmé to Maulmain. Mr. Archer, our Consul at Zimmé, reported when on his journey from Zimmé to Kiang Hai in 1887, "This is the route taken by the Ho or Yunnanese traders, on their yearly trading expeditions to Moulmein (Maulmain); they begin to arrive in Chiengmai (Zimmé) about the beginning of December, and now about the end of February, I met the first caravans returning with cotton goods purchased at Maulmain, which they proposed to sell at Chiengtung (Kiang Tung). Their parties consist generally of from 50 to 100 mules or ponies, and this year it was estimated that altogether about 800 pack animals passed through Zimmé."

We will now consider the upshot of the first season's examination of the country. In the *Asiatic Quarterly* for last October, Captain Yate, who was one of the Intelligence Department officials deputed to examine the portion of the Shan States lying to the south of Mandalay, and between the Irrawaddi and the Salween rivers, thus describes the country: "The scenery of the Salween, Namtu (Myitnge, which enters the Irrawaddi a few miles south of Mandalay), and a score of minor rivers and streams, the perfect clearness and rapid flow of the water, the overhanging cliffs, and often almost precipitous hillsides. . . . The road may run for miles along the backbone of a hill range, 6,000 feet high, pine forest on the summit and a life-giving air that reminds one of the 'old country,' while below, in the ravines and gorges, is vegetation as luxuriant and brilliant in colouring as anything to be seen in the tropics. At other times the road winds for thirty or forty miles down a narrow gorge along the banks of a rushing, tumbling rivulet, with steep hills rising straight up overhead for several thousand feet." After such a description of the country explored by him, to the south of the Namtu, it is not surprising to find him endeavouring to solace himself with the hope that a better line for engineering purposes might be found in the country to the north of the Namtu, which had not then been explored. He writes: "My impression is that an advantageous line of country may be found (for a railway) across the plateau that stretches from Theinni Myo and the Namtu valley, between the valleys of the Salween and the Shweli, to the iron bridge at Meungkeu (the bridge over the Salween crossed by the Bhamo route). But much more exploration is necessary before a definite opinion can be given on this point." We learn something of this plateau in a note on the first page of his article, where Captain Yate remarks: "Immediately north of the Namtu the country rises 1,000 feet as in a step, and then stretches north at this higher level to the Shweli (Nammau) river, and thence onward to the valley of the Taping." Now, Toungbain is the state to the north, on the plateau between Theinni and and the Shweli river. In his work "The Coming of the Great Queen," p. 335, Major Browne, late commandant of the Mounted Infantry in Upper Burma, remarks that Toungbain "consists of lofty highlands from 6,000 to 7,000 feet in elevation." Even further west, in the Ruby Mines District, the plateau varies from 4,100 feet to 6,100 feet, and the surrounding hills from 6,400 feet to 7,800 feet above sea level. This being the case, and the whole of the Shan plateau between the Irrawaddi basin and the Salween being "seamed with ranges of hills," in fact, a perfect maze of them, as can be seen in the map of the Ruby Mines District lately published in the Royal Geographical Society's proceedings, and in the map made by Mr. Gordon of the Taping and the Shweli valleys, the impression expressed by Captain Yate is surprising, to say the least of it, particularly if he has studied Mr. Baber's section (published with our report) across the pass traversed by caravans from the Shweli valley to the iron bridge across the Salween at Meungkeu. The rise from the Shweli river to the top of the pass is 4,430 feet. The pass lies 8,730 feet above the level of the sea: a crag to the north-east of the pass appears to attain to a height of 13,000 or 14,000 feet, and the fall to the iron bridge is 6,300 feet from the summit of the pass. The aspect of the gorge is thus described by Mr. Baber: "Looking up that lone avenue of precipices, between which the deserted river threads its silent way, one cannot suppress a certain sentiment of solemnity."

Supposing that this feat of joining Mandalay by rail with the bridge over the Salween is accomplished, what then? Two more passes, one 6,980 feet and the other 8,166 feet above the sea, have to be crossed before the Meh Kong is reached at a level of 4,920 feet above the sea, and then another pass has to be crossed at an altitude of 8,510 feet before Chu-tung is reached. Chu-tung, like Ssumao, is situated on the edge of the Yunnan plateau, and, like Ssumao, is 187 miles distant in a bee-line from Yunnan-Fu, the capital of Yunnan. Bhamo and Ssumao would be each 700 miles by rail from a Burmese seaport, and all of this terrible alpine country between Bhamo and Chu-tung would be avoided by carrying a railway from Maulmain *via* Ssumao, instead of from Rangoon, *via* Bhamo, to Yunnan-Fu.

Mr. Archer, our Vice-Consul at Zimmé, reported in 1887 upon the portion of our proposed railway that lies in Siam and its Shan States as follows:—

"BEST ROUTE FOR RAILWAY THROUGH NORTHERN SIAM.—If the railroad were made to pass through Zimmé, the great mass of mountains between the city and Kiang Hai would probably prove a serious difficulty. But if it were to follow the valleys of the Meh Nam and Meh Wang as far as Lakan (our route) there would appear to be no great natural difficulties to overcome, and thence north-eastward to Muang Ngow the road would lie over easy, undulating country. From Muang Ngow to Penyow the watershed of the Meh Nam and Meh Kong must be crossed; but it is of no great elevation (merely undulating ground), and I believe would not present any serious difficulties. Once this range is passed, the whole way to Kiang Hsen, and some distance further northward, is on almost quite level ground, apparently highly suitable for a railway. This route I think preferable, not only because it offers greater natural facilities, but because a large portion of the country traversed is capable of great development, and it is evident that the advantages of a railway to these states are based, not on the actual wealth, but on the consequent development of the country."

From Kiang Hsen the projected railway runs through British territory up the valley of the Meh Kong to a few miles beyond the old city of Kiang Hung, and then ascends the slope of the Yunnan plateau to Ssumao, the frontier-post of south-west China. The members of the French exploration of 1866-67 followed this part of the route for about half the distance from Kiang Hsen towards Kiang Hung, encountering no difficulties, and then struck inland, as it was the rainy season, and the plains bordering the river were swampy. For the whole length of the projected railway from Bangkok, *via* Raheng, to Kiang Hung, there may therefore be said to be no obstacle to the construction of the railway. From Kiang Hung to Ssumao the rise would be alongside the slope of the plateau, and only 2,526 feet in height. The branch line from Raheng to our seaport Maulmain presents no serious difficulties. Mr. McCarthy's survey, which was published by the Royal Geographical Society three or four months after he read his paper before that society, clearly shows the correctness of Mr. Bryce's and my remarks at that meeting. The whole distance between our frontier at Myawady and Raheng, where our Maulmain branch line would join the Siamese main line, according to his survey, is barely forty miles. Only a single range of hills has to be crossed. This is not precipitous, and it has branch valleys on both sides, which will greatly assist the development of the line over to the pass. One of the passes over the range, according to Mr. Ross, Mr. Bryce's assistant, is only 2,400 feet above the sea, or 1,770 feet above the Thoungyeen river at our boundary; and the fall to Raheng is about 2,000 feet. A little to the north of our pass a peak of the main range was crossed by the late General McLeod at an elevation of 2,685 feet above the sea.

After considering the above facts, it is evident that even the difficulties lying between Mandalay and Bhamo would be considerably greater than those to be encountered on the whole length of 700 miles between Maulmain and Ssumao, the frontier-post of South-Western China, together with those on the 268 miles between Raheng and Bangkok.

An examination of the map, after considering the above statement, will show the great advantages that the railway from Maulmain *via* Ssumao to Yunnan-Fu must have over the line suggested by Sir Charles Bernard, Mr. Gordon, and Captain Yate for connecting Rangoon with the same place. These advantages may be summed up as follows :—

1. Ssumao lies in a rich and populous part of Yunnan, 350 miles to the east of Mandalay, and, therefore, so much nearer in a crow-line to the populous parts of Szechuen.

2. A railway from Ssumao to Yunnan-Fu will be only 250 miles in length ; while one from Bhamo to the same place, either *via* Shunning-Fu or Tali-Fu, will be at least 967 miles. The line from Ssumao can be constructed by the Chinese at one-fifth of the cost of a railway from Bhamo.

3. The line from Mandalay, *via* Bhamo, to Yunnan-Fu, thirty miles beyond Bhamo enters and passes through the Chinese Shan States, which, according to Mr. Gordon, contain, beside the hill tribes, 250,000 Shan inhabitants. Leaving these at Momein it would cross an alpine region to Chu-tung, and then traverse the poorest and least inhabited part of Yunnan.

4. The line from Maulmain will draw to a port in Burma, besides the trade of Western China, that of the Burmese (now British) Shan States lying to the east of the Salween, containing about one and a half million inhabitants, and the trade of Siam and its Shan' States, containing nine million people. The line from Rangoon would have no effect upon the trade of these regions.

5. The line from Maulmain, *via* Ssumao, to Yunnan-Fu would be 950 miles long, whilst that from Rangoon, *via* Bhamo, to the same place would be 1,667 miles, or nearly double the length that the projected French railway would be from Port Courbet in Tonquin.

6. The line from Maulmain is the shortest British line that can be made for the connection of a British port with South-Western and Central China, and is the only line that could compete on equal terms for the trade of the western half of China with the French line from Tonquin.

7. The era of railways has commenced in China, and, according to Prince Chun, it is intended to carry them out first of all in the mining regions of the empire. If our railway is taken to Ssumao, there is, therefore, every probability of its serving as a nucleus for railways permeating through the Western Provinces, which are acknowledged to be the wealthiest in minerals of any in China, and into Eastern Szechuen, which is known to be the most affluent and most populous region in China.

8. The continuation of a railway from our territories into and through the Chinese Shan States and Western China will rest entirely with the Chinese Government. It is certain, as certain as night follows morning, that the Chinese will never consent to carry a railway across the great alpine and unpopulated region lying between Chu-tung and Bhamo. Bhamo will never be connected with Yunnan-Fu by rail; and however the route may be improved for mule caravans, these will still take forty-two days in traversing the distance between the two places.

9. Ssumao is only twenty-one days' journey from both Tali Fu and Yunnan-Fu. The cost of carriage from Bhamo to Yunnan-Fu (allowing 150lb. as a mule load, and a rupee a day for hire) must be £42 a ton, or double the charge from Ssumao. Whatever tends to lower the price of goods tends to an increased consumption. A difference of £21 a ton in favour of goods landed at Ssumao instead of at Bhamo would insure not only a vast increase of customers, but the carriage of many kinds of goods which cannot at present be conveyed owing to the enormous cost of transit. Goods can be conveyed ten times from England to Hong Kong and back for the present cost of a single transit from Bhamo to Yunnan-Fu.

A lengthy communication from Mr. R. **Henry Gibson**, B.A., of Taranaki, New Zealand, was also read by the Secretary.

A letter from the Venerable Archdeacon **Maples**, Lukoma, was read by Mr. Warren.

A lively discussion on the papers read ensued.

Professor **Cobb** moved, and Mr. J. **Snaddon** seconded, a hearty vote of thanks to the writers of the papers, and to the Chairman, which was carried unanimously.

EIGHTY-THIRD MEETING

Of the Society, held in the Memorial Hall, Friday, January 25th, 1889, at eight p.m., Prof. T. H. **Cobb**, M.A., in the chair.

A most interesting collection of Chinese curios had been lent for inspection by the members by the Rev. G. Owen, Councillor John Mark, Mr. Kelsall, the Rev. L. C. Casartelli, M.A., Ph.D., and of coins by Mr. Egbert Steinthal and friends.

Mr. E. Steinthal had also drawn on an enlarged scale a number of diagrams of coins, which were hung in the room.

The CHAIRMAN explained the absence of Dr. Greenwood and the Rev. S. A. Steinthal, and referred to the very interesting addresses we were to listen to on Chinese coins and on Peking. The Society would recollect that a short time ago resolutions of thanks to the Holy Father and to Cardinal Lavigerie were passed by the Society for the interest taken by them in the suppression of the slave trade. The resolutions had been forwarded to the Holy Father by the Bishop of Salford, who had, in reply, received an autograph letter, which he had very kindly presented to the Society, and which would be kept amongst the papers of the Society. He would read the following passages of the letter which referred to the Society :—

"LEO P. P. XIII.

"Venerable Brother,—Health and Apostolic benediction. The official letter signed by the chairman and other officers of the Manchester Geographical Society, on December 5th, and forwarded by you to us, has filled us with great pleasure. For it indicated clearly the kindly sentiments of that Society towards ourselves, and, what is more important, the lively feelings of philanthropy which animate all its members. For we perceive that all are equally anxious that those unfortunate creatures who are oppressed by the yoke of slavery should be restored to the natural dignity of man, and endowed with the rights of free citizens. Although we could not doubt of the agreement of individual Englishmen in this grave matter, with the authorities of their Government, whose earnest desire to abolish the curse of slavery has been clearly demonstrated, still we have been especially pleased with this explicit testimony given by a distinguished Society in a city eminent beyond all others for its commerce and busy industry. This confirms and increases the hope which we already entertained of a favourable agreement and friendly co-operation on the part of all good men for promoting a work which we ourselves have urged and have endeavoured to our utmost ability to assist, inasmuch as it involves the welfare and liberty of an infinite number of human beings and the dignity of human nature itself.

"We desire you, therefore, to make known these our sentiments to the distinguished persons who forwarded the above-mentioned letter to us, and also to the entire Society which approved by its vote a declaration so full of human kindness. We beg you to assure them of our particular goodwill towards their attention and courtesy. . . .

"Given at St. Peter's, Rome, Dec. 29, 1888, in the 11th year of our pontificate.

(Signed) "LEO P. P. XIII."

The SECRETARY made announcements as to the future meetings of the Society.

Mr. EGBERT STEINTHAL then read a paper communicated by Mr. Consul Gardner, of Hankow, on Chinese coins.*

The Rev. GEORGE OWEN, of the London Missionary Society, Peking, then addressed the members on "Peking and the Pekingese." (See p. 1.) The address was listened to with great interest.

Some discussion took place upon both addresses, and questions were asked, to which Mr. OWEN very fully replied.

The Rev. S. A. STEINTHAL then moved, Mr. J. C. BLAKE seconded, and Mr. A. A. KRAUSS supported the following resolution, which was passed with great cordiality :—

"That the thanks of the Society be given to his Lordship the Bishop of Salford for his gift of the Pope's autograph letter. To Consul Gardner for his very interesting paper, and to Mr. E. Steinthal for drawing the illustrations and reading the paper. To the Rev. George Owen for his admirable description of Peking and its people. To the Rev. L. C. Casartelli, Mr. Kelsall, Councillor J. Mark, Mr. Owen, Mr. E. Steinthal, and all those who had contributed to make the Chinese collection so interesting and instructive."

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* This paper, fully illustrated, will be issued during the year.

The Rev. G. Owen responded for all.

Mr. Kelsall moved, and Dr. Casartelli seconded a hearty vote of thanks to Prof. Core for kindly presiding, which, being passed unanimously and responded to, closed a very full and interesting meeting.

EIGHTY-FOURTH MEETING

Of the Society, at the Memorial Hall, Wednesday, February 6th, 1889, at 8 p.m., Mr. Richard Barker in the chair.

The Rev. Theophilus Parr, M.A., formerly Primitive Methodist Missionary in Fernando Po, addressed the Society on "Fernando Po: the Island and People." (See page 20.)

After Mr. Parr's address, which aroused great interest, questions were asked and replied to, and at the request of the meeting Mr. Parr sang some verses in the language of the aborigines of the Island of Fernando Po.

Mr. Molesworth moved, and Mr. Luke seconded, a very hearty vote of thanks to Mr. Parr for his very interesting address.

Mr. Parr responded.

The Secretary moved, and Mr. Belisha seconded, a vote of thanks to the Chairman, which was heartily carried.

EIGHTY-FIFTH MEETING

Of the Society, held in the Library, Wednesday, February 20th, 1889, at 7-30 p.m.; Mr. Mark Stirrup, F.G.S., in the chair.

Minutes of meetings held January 16th (82nd), 25th (83rd), and February 6th (84th), were read and approved.

The election of the following members by the Council was announced—Ordinary: Messrs. Walker Allen, jun., S. F. Armitage, J.P., Alderman Wm. Batty, J.P. (Mayor of Manchester), Fredk. Cawley, Edward Davies, Wm. Evans, J. G. Hill, Henry Jefferis, Henry Kessler, W. E. Melland, Henry Somerset, Adam Sykes, John Wilson, Harold Woolley. Associate: Messrs. Alderman Wm. Baron, T. Bramwell, Rev. Cyril C. Child, Ishmael Davies, Jonathan Fielding, Councillor Joshua Hampson, S. C. Orton, Rev. A. Redman, M.A., Lees W. Tatton.

FLOODS IN CHINA.

The Secretary read the following communication from Sir Halliday Macartney, K.C.M.G.:—

"Chinese Legation, London, 9th February, 1889.

"Dear Sir,—As a member of the Chinese Legation, I desire to offer you and Mr. Krauss my best thanks for the philanthropic interest you are taking in the sufferings of the inhabitants of certain parts of the country with which I am diplomatically connected, and I sincerely hope that the efforts you are about to put forth on their behalf may be abundantly successful.

"As requested by you, I have marked out in the map appended to the copy of the Society's Journal that accompanied your letter of the 5th instant those parts of the country where the famine is most severe, distinguishing between those where the distress arises from inundation and from drought.

"I am afraid, however, that these marks—green for the flooded districts and yellow for those suffering from the effects of want of rain—will, owing to the smallness of the scale on which the map is drawn, convey but a very inadequate conception of the enormous area over which destitution of the most abject nature prevails.

"You may, perhaps, be aware that the distress is not confined to the central provinces of China, but that it extends to parts of the country too far north to be seen in Mr. Little's map. Floods in Manchuria, caused by the overflowing of the Liaou river, have devastated large tracts of country in the Moukden and Newchwang districts, thereby producing an amount of suffering which will be much intensified by the almost Siberian winter by which they are annually visited, but which this year is said to be exceptionally severe.

"I thank you for the number of the Society's Journal you were so kind as to send me for myself, and by the same post that takes this I return you the second copy of the publication marked in the manner I have described.—I am, &c.,

"(Signed) "HALLIDAY MACARTNEY.

"Eli Sowerbutts, Esq., F.R.G.S."

Mr. P. McLAINE, Mr. J. M. MOLESWORTH, C.E., and the Rev. Mr. TURNER spoke at length on the subject from personal knowledge of the districts and from special knowledge, from having aided in the distribution of the funds subscribed for the last great famine in China.

It was then announced that Sir T. Wade, the Rev. Mr. Turner, and others intended to address a meeting next day on the subject in the Mayor's Parlour, and thereupon Mr. A. A. KRAUSS moved, the Rev. L. C. CASARTELLI, M.A., Ph.D., seconded, and Mr. J. M. MOLESWORTH C.E., supported, the following resolution, which was carried unanimously: "That the Manchester Geographical Society notices with pleasure that a meeting has been convened by his Worship the Mayor of Manchester to take steps to raise funds for the relief of the famine-stricken districts in China, and the Society desires to support the movement with all the influence in its power."

A letter announcing the death of Mr. Arnold Dehn having been read, it was resolved that this Society desires to tender to the family of Mr. Dehn its most respectful sympathy and condolence on the sad event.

The following Presentations were announced:—

Letts's Popular Atlas. By the Publishers.

Map of Africa. Published by Carl Fleming, of Glogau. By Mr. N. Kolp.

It was resolved that Mr. Krauss be requested to write to the Shanghai Branch of the East India Society, inviting them to become correspondents and exchange journals.

The following paper was then read by the SECRETARY:—

M. Tondini de Quarenghi's Proposals in Reference to the Universal Adoption of the Gregorian Calendar, from the Paris Geographical Society.

FORMOSA.

The Secretary then read some remarks on Mr. Colquhoun's paper on Formosa, by MR. J. RIPPON, C.E.

Reading Mr. Colquhoun's paper on Formosa has suggested to me the following remarks: There is only one natural harbour capable of accommodating a good-sized ship, and this is Kelung. Here dredging is about to be done, and quays and warehouses are planned, the object of the present governor being to cut out Hobé (Tamsui) and Amoy, place the tea market at Twatutia, and send on by rail for final shipment to destination by ocean-going steamers, which have been induced to come to Kelung. It is exposed to north-east and northerly winds. The anchorage at Tamsui is affected by deposits after every freshet caused by heavy rains. The bar here and at Takow requires continual dredging. During the south-west monsoon Black Head is the rendezvous for vessels crossing over to Tamsui and Makang or Dome Bay (Pescadores), and are ports of shelter for Amping and Takow. Rivers in Formosa, as elsewhere, are subject to gradual formation of banks. On the south-west coast the silting up is remarkable and rapid. From a survey taken we found it to be very different to that marked on the charts, and the gradient of the bottom, for instance, due west from the Old Fort outwards to deep water, is a gradual one of fine dark sand. The western coast line is difficult, being low and without leading marks. Trees are frequently mentioned on our existing charts, but one tree is so much like another that this information is not of much use. The whole island is, in my opinion, *placed on our maps four miles further eastward than is really the case*, and this result was arrived at after connecting the island in two places with cable—practically laying a measuring tape down. The two results agreed. The Formosa Islands are not very well lighted. I know of only one first order light at the South Cape. There is a sixth order light at Fort Zelandia. I tried to find it for some time under anxious conditions. At Saracen Head there is another sixth order light; Fisher Island—a rather better one—fourth order; a beacon at Tamsui and at Bush Island (Kelung harbour); but not much confidence may be placed in anything but a first order light. Telegraphs now run from nearly one end of the island to the other, but they are in bad order where they have been set up for some time. The trade value, as shown by the Custom receipts, say of Tamsui and Kelung, is 5,434,463 taels; and Taiwanfoo and Takow, 2,583,625 taels—in all about 2,000,000 pounds sterling. Takow has little or no import trade, and is now rarely visited. There are only a few foreigners there. The export of sugar from Amping is rapidly falling, owing to heavy export duties imposed by the present governor to meet extraordinary and too rapid outlays. In 1884 it was 897,110 piculs, and in 1886 362,826. Camphor has become a government monopoly. Coal may improve, as the management of the collieries has been given to a very able and honest engineer (Mr. Matheson). Formosa tea is of a peculiar but very fine scented flavour. The quality is declining, owing to neglected Chinese cultivation. The fauna of Formosa consists of monkeys, wild deer, boar, badgers, martens, and the scaly anteater. Birds and snakes are not numerous. The history of the island is a very short one. In 1661 it was virtually owned by the Chinese. The Dutch founded several settlements in 1634. In 1661 a Chinese pirate, Koxinga, settled and assumed sovereignty over West Formosa. His grandson and successor was induced 22 years later to abdicate in favour of the Chinese. The Hakka settlers, a hardy tribe of hillmen, are resolute foes of the aborigines and act as a 'buffer.' In 1874 the Japanese landed a force to punish the Chinese on the north end of the island for wrecking and maltreatment of some stranded Loochooans. From 1884 to 1885 the French held Kelung, but were beaten away from Tamsui.

The SECRETARY read

THE PRELIMINARY REPORT OF THE QUEENSLAND GOVERNMENT METEOROLOGIST (MR. C. L. WRAGGE, F.R.G.S.) FOR THE YEAR 1887.

To the Honourable the Postmaster-General.

Meteorological Office (Chief Weather Bureau),
Brisbane, 26th October, 1888.

Sir,—I have the honour herewith to submit a preliminary or outline report, prefatory to my first Annual Report of the Meteorological Branch of the Post and Telegraph Department, together with a syllabus of the contents of the same. Owing to the peculiarly heavy nature of the work attaching to the organisation of a scientific and thoroughly practical meteorological office, training assistants, establishing and inspecting observatories, the examination of monthly and daily reports from over 180 (rising 250) stations, apart from the results from the newly-constituted instrumental stations ; the preparation of many diagrams, charts, and synopses—important branches of the work which have to be executed with the utmost nicety ; and my recent duties at the Melbourne Meteorological Conference, the main report is not yet finished, although rapidly approaching completion. However, I shall, of course, continue to use every effort to hand it to you at the earliest practicable moment. I have now the pleasure to hand you this introductory outline, venturing to think that you will concur with me in the belief that I am the better doing my duty to the colony by taking time sufficient to enable me to launch what I humbly hope will prove a standard work on the climate, than by hurrying through my volume at a sacrifice of accuracy and completeness even to place it on the table of the House within the session. I may add that as the organisation of my system evolves, the report will obviously be ready earlier each year, until I shall be enabled to present it to you probably as early as March following the year to which it belongs, or even sooner.

I was informed of my probable appointment to the position of Government Meteorological Observer to Queensland when in Adelaide in November, 1886, and took office on January 1st, 1887. During December, 1886, I arranged with the offices at Adelaide, Melbourne, and Sydney for a complete system of intercolonial weather telegraphy, to commence on January 1st following, including Western Australia, Northern Territory, and Tasmania (New Zealand added later), and settled that such messages should be wired to Brisbane as exchanges ; since, in order (*a*) to correctly interpret the climatic factors of Queensland, and (*b*) to make the office of practical use to general interests, especially by the issue of daily weather forecasts, a knowledge of the meteorological conditions prevailing over Australasia cannot be dispensed with.

On December 31st, 1886, no meteorological organisation (properly so called) existed in Queensland, and the daily reports published on the boards and by the press were very meagre, and frequently inaccurate. Specimens of these 1886 reports will appear in my coming volume.

By December 31st, 1887, Brisbane had become, as a matter of fact, the chief weather bureau for all Australasia, whether recognised as such intercolonially or otherwise, by reason of this office having taken the entire initiative in issuing Australasian signal forecasts similar in principal to those framed at London and Washington. A special feature of the work was the inauguration of a larger weather chart of Australasia, containing a graphic record of all the chief meteorological elements published by this office daily, except Saturdays, Sundays, and holidays (still continuing), and sent to subscribers, and also to institutions, scientific societies, &c., in various parts of the world in exchange for their publications. Our donations from abroad are rapidly accumulating in the shape of books, reports, and such like, and hence I am forming a very valuable official library. I regret that, notwithstanding frequent applications, I have been unable to obtain certain donations of books sent to Brisbane anterior to my taking office and belonging to this Department.

Our system is managed entirely in accordance with the rules and principles of the Royal Meteorological Society, Meteorological Office, London, and Chief Signal Office, Washington, than which no better are known. The following is the syllabus of my forthcoming Annual Report :—

SECTION I.—Complete account of organisation, system, inspection, and work.

SECTION II. (A).—Results and tables, comprising : Rainfall of North Queensland, rainfall of South Queensland, prevailing winds, force of wind, and mean amount of cloud. Abstract of reports for each month, with notes on stock, state of country, &c.,

from every post and principal telegraph station, and also from many squatting stations, in the far west and elsewhere. Climatological and other tables from all stations supplied with instruments. Specimens or description of daily weather reports. (B).—Selected correspondence.

SECTION III.—Diagrams and maps, comprising: Meteograms from Brisbane Observatory, giving a graphic record of all the chief meteorological elements for entire year. Temperature curves for Blackall, Brisbane, Bulimba, Cambooya, Cape Moreton, Cooktown, Ipswich, Lowood, Rockhampton, Roma, Sandgate, Stanthorpe, Toowoomba, and Warwick. Diagrams of the climates of Adelaide and Roma in the interests of wheat production in the Maranoa. Adelaide temperature curves for comparison with those of Brisbane. Four seasonal wind charts. Four seasonal cloud charts. Six selected and seasonal copies of the large daily weather chart of Australasia. Earth temperature curves, rainfall maps, &c.

An outline account of the work during the present year (1888) is found in the Postal Guide, and also appears as an appendix hereto. Specimens of daily registers, monthly and weekly synopses, sundry diagrams and charts, are also sent to be laid on the table of the House herewith, but are not intended to be printed or rather to appear as part of this introduction to my Annual Report. Photographs of the instruments of the Brisbane Observatory are also sent.

If, sir, by any effort of mine I have been enabled to place Brisbane in the honourable position of being practically on a meteorological footing equal to that obtaining at London and Washington, at least in the matter of the signal weather forecasts already referred to, I have but done my duty to the shipping and general interests of Queensland in Australasia. Indeed, accepting the experience, with the situation, of the Chief Signal Office at Washington as a criterion with reference to forecasting for the United States, it will be difficult to gainsay the suitability of the geographical location of Brisbane for a continuance of the position we at present occupy.—I have, &c.,

CLEMENT L. WRAGGE,
F.R.G.S., F.R. Met. Soc., &c.

A considerable discussion arose from the reading of the papers, and votes of thanks to the writers of the papers and the Chairman closed the proceedings.

EIGHTY-SIXTH MEETING

Of the Society, held in the Cheetham Town Hall, on Friday, February 22, 1889, at 7-30 p.m.; Mr. S. OGDEN, J.P., in the chair.

A large number of photographic slides was admirably shown by Mr. Stanley, and were described by several members. The views comprised views of East Africa by the Rev. Lawrence Scott, of the Congo by Mr. R. C. Philips, and of Athens by Mr. Pingstone, and some fine views of Scotch scenery lent by Mr. Chapman.

Miss Edie Webster performed on the piano, and songs were sung by several members and friends.

Very hearty votes of thanks to the musicians, to the lenders of the slides, and to the chairman were given on the motion of the Rev. S. A. STEINTHAL, seconded by the Rev. L. C. CASARTELLI, M.A., Ph.D.

Mr. OGDEN responded, and said that he was very much pleased to preside over a meeting of this kind held by the Society so well attended, and hoped that many others, of a like interesting character, would be held by the Society.

EIGHTY-SEVENTH MEETING

Of the Society, held in the Memorial Hall, on Wednesday, March 6, 1889, at eight o'clock p.m.; Mr. S. OGDEN, J.P., in the chair.

Th death of Mr. R. Peacock having been announced, Mr. M. STIRRUP moved, and Mr. F. ZIMMERN seconded, a resolution, "That this meeting of the Manchester Geographical Society desires very respectfully to tender to the family of the late Mr. Peacock their very cordial sympathy and condolence in the loss they have sustained in the close of a life so nobly spent as that of our late member, and that the resolution be duly transmitted."

The SECRETARY read a communication from the Rev. A. Colbeck, of Lindley, on "The Sea of Azov." (See p. 29.)

Mr. J. M. MOLESWORTH, C.E., addressed the members on "A Journey from Tientsin to St. Petersburgh" (see p. 36), which was illustrated by a large diagram map and a very choice and beautiful collection of photographs and curiosities lent by Mr. Molesworth.

Several questions were asked and replied to by Mr. Molesworth.

A vote of thanks to the Rev. A. Colbeck and to Mr. Molesworth, for his very admirable address, was passed with great heartiness on the motion of Mr. H. WOOLLEY, seconded by Mr. A. A. KRAUSS.

Mr. MOLESWORTH replied, and promised other papers, and proposed the thanks of the meeting to the chairman, which being seconded by Mr. LUKE, was carried unanimously.

Mr. OGDEN replied in a few graceful words, and the meeting closed.

EIGHTY-EIGHTH MEETING

Of the Society, held in the Museum of Owens College, on Saturday, March 16, 1889, at 3-30 p.m.; the PRINCIPAL of the College in the chair.

Professor W. BOYD DAWKINS, F.R.S., &c., received the members, to the number of about one hundred and fifty, and gave two addresses on the design and arrangement of the Museum.

At the close of the addresses, Mr. Councillor BOSDIN T. LEECH moved, and Mr. J. HAINSWORTH seconded, a resolution, "That the best thanks of the Society be given to the professor for his kindness in addressing the members, and for the opportunity of examining the Museum."

The resolution was heartily carried.

Professor DAWKINS responded.

The members then proceeded to examine the exhibits show in the building, and were very much delighted with the arrangements of the contents.

EIGHTY-NINTH MEETING

Of the Society, held in the Library, on Wednesday, March 20, 1889, at 7 30 p.m.; Mr. B. O'CONNOR in the chair.

The minutes of the meetings held on February 20 (85th), 22 (86th), March 6 (87th), and 16 (88th) were read and approved.

The presentation of three very beautiful geographical monographs by Prince Roland Bonaparte was announced.

The election of the following members by the Council at its last meeting was announced:—

ORDINARY: Messrs. G. H. Armitage, H. W. Bleackley, Raymond T. Eddy, Alderman S. Ogden. J.P., J. H. Reynolds, and Robert Smith.

ASSOCIATES: Messrs. Charles A. Clarke, Cammack Dennis, S. Grady, Thomas Henry Hall, Fridolin Landolt, Edward Samson, H. Sowerbutts, Assoc.N.S.S., and George Vernon Webster.

The death of Mr. Alderman Goldschmidt and the letter sent to his family by the chairman and vice-chairman was read. The members very cordially endorsed the message of the letter, and desired to be included in those who respectfully sympathised with our late trustee's family and friends.

The following reply from the late Mr. Peacock's family to the vote of condolence passed by the Society was read:—

[COPY.]

"Ralph Peacock and the family of the late Mr. Peacock return sincere thanks for kind sympathy and remembrance, highly valued.

"Gorton Hall, Gorton, March, 1889."

Announcements as to meetings up to June and the excursion to Paris were made.

Mr. G. H. WARREN then read a communication from the Venerable Archdeacon Maples on the "Island of Lukoma" (See p. 59.)

The SECRETARY read a communication on "From Newcastle to Y-nesei," from a correspondent of *Industries* (see p. 68), and a letter on "El Senoussi and the Mahdi," a paper by a correspondent of the *Manchester Guardian*.

EL SENOUSSI AND THE MAHDI.

CAIRO, FEBRUARY 19.

THE report of the victory of the Senoussiya in Kordofan, which reached us more than a fortnight ago, seems to be confirmed, and if all that comes to us with regard to it is true, the Khalifa cannot long hold his position at Omdurman. A glance at the map will make the position clear to your readers. Khartoum stands, surrounded on three sides by water, in the fork made by the branching of the Blue and the White Nile. The Mahdi, fearing the difficulty of crossing the river in case of an attack in force which might oblige him to evacuate the town, preferred to establish himself, after Khartoum had fallen, at Omdurman, on the left bank of the White Nile. From Omdurman the road lay clear for a retreat into the mountains of Kordofan. It seemed that in that country his enemies might be safely faced. But in making these dispositions he counted upon an enemy which should come against him from the north, and upon a devoted Kordofan, the cradle and stronghold of Mahdism, in his rear. Now the conditions are reversed. El Obeid, the principal town of Kordofan, is reported to be in the hands of an enemy more formidable perhaps than any which was at all likely to have marched against him up the Nile. What was his front has become his rear, and if he attempts to retreat it must be through the desert of which for five years he has rendered every oasis desolate, to fall at last upon an Egyptian frontier bristling with bayonets, and lined with tribes who seek only an opportunity to rise against him. Since the success of the Egyptian troops at Suakim, refugees from the border have become more numerous, and everywhere the story is the same of ruin and devastation worked by the wild hordes who have hitherto obeyed him. Even his troops detest his rule. The towns and villages that he has destroyed are so many vengeances stored up against him for the day of his defeat. He dare not risk the being taken between an opposing force marching up against him from the south and such a line of hostility on the north. What is to be expected is that he will abandon Omdurman without waiting for an attack, and endeavour to slip past the approaching army into the fertile district of Sennaar. Then he will have lost the Soudan, and all the territory which lies between the present frontier of Egypt and the old frontier of Mehemet Ali will be in the hands of the power which has risen against him. And who and what is this power? The report telegraphed at first from the frontier, and now given us in greater detail by the arrival of Messedaglia Bey himself in Cairo, is that El Senoussi, with Saleh Bey, the chief of a very important tribe of the Western Soudan, who did us good service, it will be remembered, in the Nile campaign—Raabeh, once chief of Zebehr's forces—the Sultan of Dar Sula, and the Sultan of Wadai, who is a devoted adherent of Senoussi, have marched at the head of a large army through Darfour and Kordofan, taking Faschen and El Obeid, and are now preparing to march against Omdurman. Their troops are said to be as "numerous as ants in a granary," and El Senoussi is reported to have written a letter to the Khalifa, in which, after indicting him as a robber and one of the basest of mankind, who, not content with stealing a province from its sovereign, has spread ruin and misery in it from one border to another, he declares his own intention of taking the Soudan from the Khalifa, and restoring it to peace and order and to Egypt.

A rising of the Senoussiya has not hitherto been reckoned with as one of the probabilities of the Soudan, but if it has indeed taken place it is likely to prove an event of the greatest interest and importance to Egypt. Sid Hamed Senoussi, their present head, is the eldest son of Sheikh Senoussi I., the great Mahometan reformer who founded the sect about a century ago. Since his establishment in Tripoli in 1843, the spread of the doctrines which he preached has been one of the most remarkable features of African history. His agents have spread themselves through the whole of North-eastern Africa, and the influence of the Senoussiya as a religious confederacy is felt from Morocco to Syria and from Tripoli to Zanzibar. Before the outbreak of Mahdism all the tribes of the Soudan who were not idolaters were Senoussiya, and nowhere had the new religion been more warmly and generally accepted than in Darfour, Wadai, and the neighbouring States which border upon Lake Chad.

At the time of the foundation of the sect circumstances contributed to throw political as well as religious power into the hands of the great Sheikh, and in Tripoli, where he seems to have allied himself with the forces of Government, the power of the Senoussiya was recognised as a valuable assistance by the Turks. It is said that the administration of the province is carried on almost entirely by agents of Senoussi's choice. Since the death of the first Sheikh, his son, who has taken up his residence in the oasis of Simah—the classic Jupiter Ammon—professes to absorb himself entirely in religious contemplation, and to take no part or interest in political questions. Pope of the Western Soudan, he is picturesquely described as receiving with veiled face the pilgrims who make their way to his capital, exhorting his devotees to austerity and purity of life, to charity towards their neighbours, and endurance of the sorrows and sufferings of life. He has taught them to look forward to a time when the Messenger of God shall appear and come forward to combat the evil by which the world is oppressed; but in the meantime, both by spirit and letter, he has counselled abstention from mixing themselves in worldly struggles. His influence is so great that attempts have, of course, constantly been made by political leaders to win his sympathies for their enterprises. To all he has returned the same answer, that his business is with the souls of his people, and not with their material well-being. The signature which he attaches to his letters is "Senoussi el Mahdi," and the confident expectation of his followers is that some day he will cast away the veil from his face and come forward himself to occupy the place of their Messiah.

If it be true that this man has consented to leave his retirement and has placed himself at the head of an army for the avowed purpose of conquering the Soudan, there can be little doubt that the reign of the Mahdi is at an end, and an altogether new chapter of history has opened on the Nile. He is perhaps the only man in Africa who has the power to do what the letter attributed to him declares that he intends to do; but for Egypt the interesting question will naturally arise, whether, when he has carried out the first part of the programme and restored the Soudan to peace and order, he will still have the inclination, or even, it may be, the power, of restoring it also to the government of the Khedive. At present the general opinion here among the well-informed is, that he is not in person at El Obeid; but there is a strong inclination to give credence to the report that a rising organised by his agents and countenanced by his authority has taken place, and may lead to new and altogether unexpected developments of the Soudan question.

Mr. C. Grindley then read a paper on "The Caves of Adelsberg," from the *Field* of December 29.

THE GREAT CAVE OF ADELSBERG.

Adelsberg may be reached from Trieste in about three hours by an ordinary train. By rail it is fifty-two miles away, though in a direct line, over the stony hills and mountains, the distance is only about half as much. The cave of Adelsberg is so notorious a wonder—at least, in the Austrian empire—that cheap tickets to the town of Adelsberg are issued from the neighbouring larger towns, in winter and summer alike.

I left Trieste on April 7 by an early train for Adelsberg. The weather was iniquitous. Never have I felt or beheld (in its effects) so fierce an infliction as the "bora," or north-easter, which on this April day rushed and roared from the Pole, by way of the Carpathians, and was channelled upon the railroad by the hills on either side of us. It had sprinkled us in Trieste with snow in the night. Thanks to it, the fair Adriatic was black and lowering to the horizon. The vineyards on the maritime slopes and the blossoming fruit trees looked grievously out of place in the teeth of it; and every traveller was cursing or groaning at the phenomenon, which howled outside the cars like a kennel of demons, fought against the train so as to moderate its pace—officially moderate enough, in all conscience—and set us all shivering at each other for company.

It is said that this "bora" is at times strong enough to overturn the cars of a train. I can quite believe it. One could certainly be much amused to see how it bundled guards, porters, and passengers down the stations which it enfiladed, and with not one thought for their feelings or their dignity.

The country is singularly stony. For miles one looks upon a rugged plateau of granitic or limestone cobbles, amid which the naked substratum of rock also contrives to protrude itself in forbidding pinnacles and knobs. This is especially remarkable by Nabresina, the junction whence we turn inland. From this point the rise is incessant. Trieste is on the sea level; Adelsberg is 1,800ft. above the sea. We pass from one upland basin to another, with mountains on both sides, high but not impressive, and with a few red-roofed villages among the mountains.

But in one particular the land is exceptionally blessed. It abounds in grottoes and subterranean passages. These homes of the jins culminate in the Adelsberg Cave. But many of the caves fall little short of the Adelsberg. They are less civilised, they are not under the indefatigable administration of a cavern committee, and they are not lit by electricity and pervaded by excellent highways, laid with tram-lines, &c. This is the essential difference. The average tourist prefers to take his subterranean pleasure pleasurably. Among the caverns of Divaca, the Reka, and others, between Nabresina and Adelsberg, he may prowl, with a lantern or two, for a day or a week, risking his life at every step, and not able to appreciate a tithe of their graces; whereas at Adelsberg art helps nature with a will.

Adelsberg is a pretty townlet of some two hundred stout houses and two thousand souls. The "bora" very adequately explains why the buildings are so thick-walled, and why double windows are the fashion. A large proportion of its people are Slavs. The inscriptions over the shop doors are in Slav, or else of the pictorial kind (a coffee pot and rolls, or a sectioned lemon, betokening places of refreshment) understood by all the world.

Though so elevated, Adelsberg is surrounded by burly limestone hills. These obligingly open, however, to the "bora," or the "bora" has compelled them. Thus the wind on this April day blew an Arctic hurricane in the upland basin of Adelsberg, whistling round it as if feigning to be wrathful because it could not find the way out by which it had come in; and, thanks to it, dark clouds hung over the hill tops, magnifying their height, save where a lurid glow broke over one peak to the south.

A basin of soup at the Crown Inn now introduced me to a couple of excellent Vienna tourists, who had been drawn to Adelsberg, like myself, by the cavern. They were man and wife, familiar with the Slav tongue, and amused by my indefinite manner of speech. For them at first the "bora" was a deterrent to all pleasure-seeking; but with a genial good nature, that I still must thank them for, they offered to accompany me, that I might not have upon my shoulders the exclusive burden of the cost of lighting the cavern. Orders were therefore issued for the illumination, according to tariff, and we awaited the summons.

At two o'clock the cavern guide presented himself, and said that all was in readiness. The servants of the administration had for the last two hours been busy setting the lights for us throughout the length and breadth of the cave. It was but a quarter of an hour's walk from the inn to the cavern portico. On the way we passed the old castle, "The Eagle's Perch," (Arisperch: Arensperch, as it was called before the name hardened to Adelsberg), nearly 400ft. higher than the town, and set boldly upon a spur of the mountain mass whose interior we were going to investigate. We also came to the river Poik, which ran with a full stream of pale blue snow water in the valley. This river is one of the finest constituents in the general panorama of the cave. It lends the one feature without which underground scenery can hardly become sublime.

A few formalities have to be gone through at the entrance to the cave. Without formality a German association of any kind is incomplete. Therefore it is one of the laws of the Adelsberg administration that every visitor inscribes his name in a book before he begins the visit. By this means the crafty Croats seek to obtain exalted titles to add to the list of "high and mighty personages who have honoured the cavern with their presence." Among the current list of such European dignitaries it is singular to note that no English prince or princess of the blood has ever been here.

The first part of the cave is not remarkable. It is a well-executed tunnel in the hill, with a level path—nothing more; but soon it widens, the noise of rushing water increases, and then a turn in the tunnel brings a magnificent spectacle before us.

This is the Cathedral Grotto, or Neptune's Cave—a chamber 72ft. high, and about 160ft. wide. Where we enter it we are near its vaulting. We therefore look down on the white foam-flecked river, spanned by a couple of bridges, and upon the hundreds of lights which line the staircase leading to the bridges and the further roadway. In the words of the local author, "it is truly a piece of fairyland out of the 'One Thousand and One Nights.'" Here began, in our case, that infinite stream of adjectival utterance, which for the next two hours poured forth unceasingly:

"Wunderschön!" "Sehr schön!" "Sehr romantisch!" "Sehr hübsche!" and the like.

In earlier times the adventurous traveller who, with quaking breast, had got thus far in the cavern, was wont to be satisfied with the Cathedral Grotto. Having viewed it, and perhaps descended to the water, he retraced his steps, and recorded his wonderful experiences in his diary. Nowadays it is vastly different. Instead of being able to go but a couple of hundred yards into the mountain, we can now, thanks to engineers and masons, go a couple of miles. The very river is spanned by a strong iron bridge, able to resist the spates, which, with the melting of the winter snows, were wont to flood the old natural bridge. And in the summer, when Austrians come hither by hundreds a week, electric light guides their footsteps down the shiny stairs, even as if they were in an imperial palace.

In this superb grotto one has little opportunity of judging of stalactites in detail—the entire *misè en scène* fascinates too profoundly; but having descended to the river and crossed it, we turned into a narrow gallery, where, in the words of the local author, once more we learn how "nature's whims put all painters to the blush." Her whims are here all of the staglamitic kind. It were endless to recapitulate the names of the freaks of formation, which our guides solemnly enumerated one by one, as guides will. One of the most beautiful of the earlier formations is the Red Waterfall, formed of inclined layers of a pinkish material, which fairly dazzles the eye by its lustre, under the radiance of many lights. The "Name Hall," or "Place of Initials," must also be mentioned in this older part of the cave. Here are myriads of sign manuals, dating from the thirteenth century. The student of the initial craze will find valuable evidence of its antiquity in this part of Adelsberg Grotto.

We now leave the precints of the Cathedral for the second part of the cave—the Emperor Ferdinand's Grotto. This vast grotto, more than half a mile long, and diversified by various expansions and involutions, was discovered in 1818. In 1819 the Emperor Ferdinand I. (then Crown Prince) visited it: hence its name. Let me briefly enumerate some of its wonders. First, it is pervaded by a tramway, so that delicate ladies may, for an extra florin, see all its beauties at their ease. The most gorgeous stalactites stand in colonnades on both sides of the passage. Here is the Diamond Mine, a glittering rock worthy of Golconda; the Baconrind, an excrescence, the darker material of which explains its name; the Butcher's Shop, where stalactites hang like joints of various shapes and sizes; another waterfall, in which the tints are white and grey; the Elephant's Head, a huge thing; the Font, the Crinoline, the Sarcophagus; the Opera Box, a rare piece of natural masonry; the Tassel, wrought with the delicacy of an upholsterer, and many another.

Some of the columns are ten and twelve feet high, and of immense girth. The mind is perplexed by the rule-of-three sums, which are, of course, the outcome of thought upon such works of nature. It takes, they say, ten years of time to make material no thicker than a sheet of paper: two thousand years to build a yard. One is sent floundering into infinity in the effort to calculate the ages necessary to raise such stalactites as these, so tall and of so great a girth.

Nearly midway in the Ferdinand Grotto is the famous ballroom, a chamber about 160ft. long, 90ft. wide, and 45ft. high. Here, every Whit-Monday, a ball of repute takes place. People come from Vienna to attend it. Five thousand dancers sometimes then make the cave echo with their voices. Candles and electricity and the gorgeous glow of Nature's tapestry must make up a scene of witchery hardly to be matched on this earth. There is a daïs for the band, a well of sweet water as part of the "buffet," and a very smooth prepared surface for the dancers. The tramway traverses the Ballroom, but this is only one more unconventional feature in an unconventional place.

After leaving the Ballroom we pass fresh' phenomena ere the Ferdinand Grotto ends—the Handkerchief, the Leaning Tower of Pisa, the Wax Candle, the Turtle, the Fish Net, the Moonshine Cave, a recess through the dainty walls of which the outer light from the Candles and lamps filtrates with a softened glow ; the Wax Room, the Cypress, the Egyptian Mummy, &c.

We have walked nearly a mile by the time the Ferdinand Cave gives place to the third large chamber—the Francis Joseph and Elizabeth Grotto. The stalactites are here more ruddy. The road also is narrow. Indeed, after going about seventy yards one comes to a palpable piece of excavation. In the year 1856 a tunnel some twelve and a half yards long was made to open out further wonders—with brilliant success.

Among the treasurers of this chamber are the Laundry, a place hung with snow-white drapery about a third of an inch thick ; the Crocodile ; the Sleeping Maiden ; and the Sword of Damocles, a fine suspended stalactite, which in a thousand years or so will have outgrown its present name. The rose and white and dark brown formations here lend themselves admirably to pictorial purposes. This grotto is in all about 650ft. long, with a very diverse breadth and height. It ends with the Belvedere, a very spacious chamber, about 100ft. high, and with an irregular surface, so that lights may be dispersed about it very effectively. Here, in 1857, the Emperor Francis Joseph and the Empress Elizabeth consecrated the latest discoveries of Adelsberg. A black marble pyramid in the middle of the Belvedere commemorates their visit, and also a second visit of the Emperor twenty-six years later, in 1883.

From the Belvedere an offshoot grotto that is not thoroughly explored leads on the left hand to the bed of the Poik once more. The gloomy, and indeed fearsome, nature of this apartment is well indicated by its name—Hell. The riot of the river is heard, not seen, though the base of the cave is deep in water, which has, no doubt, come from the stream by lesion in the walls which divide it from the actual water-course.

It is better, then, to have little to do with Tartarus, and proceed direct to the most gorgeous of all the show apartments of Adelsberg. This is known as the Mount Calvary Grotto, and is the highest and the extreme point of the cave at present. Where we enter the main cave and cross the river we are 122ft. lower than the town of Adelsberg, but the summit of Calvary is 62ft. higher than Adelsberg, so that the climb upwards to Calvary is nearly 200ft.

I hope I may never lose the impression made upon my mind by this really exquisite subterranean freak. Imagine an oblong room about 600ft. in circumference, and 172ft. from its lowest part to the irregular ceiling of it. Imagine also a great pile of rock rising in the middle, somewhat on one side of the room, 120ft. of the 172ft. towards the vaulting. Cover this semi-insulated mass with a myriad of stalagmite columns like the ruins of an old city of the Pharaohs, and a multitude of other fanciful representations. Amid this gracious *débris* compose a crucifixion scene. Disperse lights here and there, enough to satisfy the sense of vision and fire the imagination, and then make what you may of a very memorable picture. Our shadows (magnified a hundred times) swung hither and thither about the dim, rough roof high over our heads. There was no sound save the echo of our voices in perpetual apostrophising. Thus we slowly clambered to Calvary by a road as steep as that which leads to the Parthenon—indeed, the illusion of sweet ruin and the tender radiance on the elevated columns put me in mind of Athena's temple, though the dome of blackness and strange shadows was certainly dissimilar from the pellucid blue of a Grecian sky.

The ascent to Calvary is made by a zigzag cut in the limestone, and protected by railings. On the way a few eccentric developments are noticeable. For example, the Dove and the Parrot on the left hand, near the summit. Lower down the Tent is noteworthy, and the Curtain, though this Curtain is far surpassed by one we shall see a few minutes later.

I must not forget the colour of the Calvary monuments. The formations are not only of the most dazzling white, encrusted with laminæ which glitter like innumerable diamonds, but are also yellow, red, brown, smoky, orange, and sepia. Among them is Noah's Ark, which has been turned to account as a visitors' book. Its sides are scored with names, nor have "exalted personages" forborne to desecrate the place as vigorously as their inferiors. A Duchess of Parma, *inter alia*, has commissioned her guide, companion, or friend to thus enrol her with the other Vandals.

Milan Cathedral is another incident in the beauties of Calvary. It is easy to fancy how the airy white pinnacles of this great building lend themselves to the genii of the cave for reproduction. The whole of Calvary, and the part of the cave from the Belvedere, dates but from 1865, and is christened after the Empress Maria Anna.

This is, in one direction, the extremity of Adelsberg's Grotto as far as it is made accessible; but it is not necessary to retrace our steps, as a loop leads us to the Grand Duke John's Cave and the tram line, whence we regain the Emperor Ferdinand's Grotto and the entrance.

In this neighbourhood our palling energies are revived by new marvels. We see the biggest stalactite in the cave, a stout column 31ft. high, and contemporary with Adam at the very lowest computation. There is also the Gothic Hall, a name which sounds its own trumpet; but most alluring of all, and a sight to hold one speechless for a moment, is the Curtain. This is a semi-detached stalactite, thrust from the wall, so that a candle may be held behind it. The dimensions are 9ft. by 3ft., with the thickness of but one-third of an inch. Nothing can exceed the refinement of Nature's colouring of this Curtain. The tones of clear red, brown, and white are so delicately blended, and the illusion is so very thorough, that one involuntarily sighs for so engageing a piece of tapestry, and bethinks one which room it would best adorn. My good friends the Viennese here quite exhausted their adjectives of admiration. The most extreme superlative of praise fell from their lips again and again, and thenceforward, until we saw the flash of lights in the river, and then the chill daylight outside, they were nearly silent.

Altogether we were underground, or rather under mountain, about three hours. As the author I have already twice quoted remarks, "The only defect of the cave is its size, which tends to produce fatigue." One might as reasonably say, "The only defect of a pretty woman is her beauty." But certainly we were rather tired, and not very much disposed to loiter once again in the "bora" to inspect the mineralogical trifles which some hardy little boys of Adelsberg offered for sale in the open. The cavern, though damp and cool (about 48° Fahr. uniformly summer and winter), was agreeable in comparison to the "bora," with its degree or two of frost and its unbounded impetuosity. And so we all made haste to the Crown, where we dined in Slav fashion, and whence by-and-by I hurried through the gale to the railway station in time to catch the Vienna mail for Trieste.

Let me add, for the information of tourists who find themselves in the vicinity of Adelsberg, that from May to October the cavern is daily lit by electricity, when the charge for admission is 5fr. (2½ florins) each. At other times visitors must give notice of their impending visit to their Respectabilities the Cavern Authorities, who will then light candles in proportion to the sum to be expended. For 160 candles (too few, by far), the charge for one person is 4 florins, and for three persons 6 florins; for 1,800 candles, one person must pay 21 florins, and three persons 23 florins. But of all the seasons of the year, Whit-Monday is the best for Adelsberg; it is to the cavern as Holy Week is to Rome.

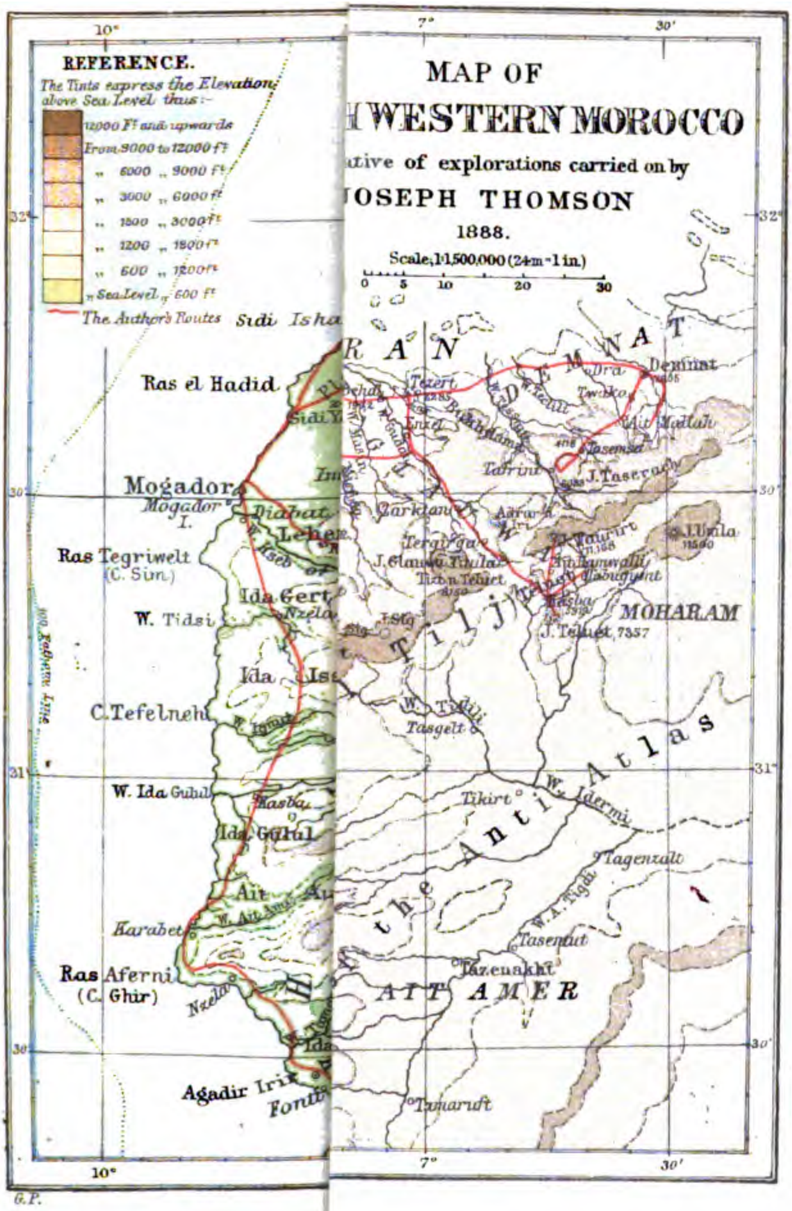
Whether justly or not, Adelsberg claims for its cave that it is not excelled in size by any except one in North Hungary and the Mammoth Cave of Kentucky. For its beauty it claims to be pre-eminent, nor will it be the fault of the engineers and the administration in general if, in time, they cannot enlarge the cave to the size even of the prodigious American burrow.

Messrs. Theodore Gregory, F.C.A., and J. G. Blake were elected as the Auditors of the Society.

Letters from the Rev. W. C. Porter, M.A., Newala, on "East Africa," and the Rev. Mr. Mackay, Central Africa, were read and considered. (See letter, p. 76.)

A vote of thanks to the writers and to the readers of the papers, and to the chairman, closed the proceedings.

Father Damien.—In the Pacific Ocean, about midway between America and Australia, the traveller comes to the Hawaiian Islands, which were discovered by Captain Cook one hundred and twenty years ago. These islands are places of exquisite beauty. One of these islands had been chosen by the Hawaiian Government as a leprous settlement. Into this land of lepers there came, in 1873, a man, named Joseph Damien de Venster. He had heard of the loneliness and abandonment of the lepers, and his great heart filled with compassion, and his mind filled with determination to go to them, and spend, and be spent, in doing them good. He knew how great was his risk. Joseph Damien was born at Louvain, in Belgium, in 1841. His parents were good people, Roman Catholics, and taught their son to serve God; so that it is no wonder we hear of him often wishing he might become a priest. His brother was already studying and preparing for that office. On Joseph's nineteenth birthday his father took him to visit this brother, and, having business to transact in a neighbouring town, left the brothers together. Joseph saw his opportunity, so when his father called for him to return home, he declared his intention of remaining to prepare for the priesthood; and sending his love to those at home, explained that it would save them the pain of saying good-bye, if he entered upon his studies at once. Both brothers seem to have been bent on going out as missionaries, and the elder had just received his appointment to the South Sea Islands, when a serious attack of fever prostrated him. Young Joseph, although he had not gone through the complete set of studies, at once broke the rules of the college, by writing to the authorities for permission to take his brother's appointment, without showing his letter to his superior. The superior, when he received notice from the authorities accepting Joseph, playfully scolded him for breaking the rules, and ended by telling him to take his brother's place as missionary. Joseph was so overjoyed that he did not know what to do to relieve his excitement; and it was only after he had run round and round the courtyard, and stood on his head several times, that he became calm. At last he was off to the South Seas, and while at work there, he heard of the sad state of this leper settlement. The more he heard, and the more he thought of them, so much the more did he long to go to them. At last permission was granted, and he set off for Molokai. Stepping ashore there, with a noble determination never to leave them, but to do, and, if needs be, to die for them, he said to himself: "Now, Joseph, my boy, here is your life's work." His strong will and cheerful spirit soon began to set the place in order. He, with his own hands, helped to build substantial clean huts for the people, erected a hospital, a church, and made them a guest-house, for every now and again a boat would land on their shores the friends, the wives, husbands, or children of the lepers, who came as visitors. Nursing the sick, comforting the dying, teaching, feeding, and clothing them, restoring order, giving cleanliness and comfort, bringing, from a lake he discovered, a supply of ice-cold water to the settlement, so Father Damien's time passed by. But one day the visiting doctor, after examining him at his own request, confirmed his suspicions by saying: "I cannot bear to tell you, but you, too, are a leper." Yet he was not distressed, but seemed to crowd more work than ever into his life. At last, in April of this year, the end came. Father Damien, the good leper hero, quietly died, and was buried under the same tree which first gave him shelter when he began this noble work at Molokai Father Damien was always hopeful that a cure for leprosy would be discovered. Let us hope this may be the case. As a memorial to the noble-hearted priest, a sum of money is to be set apart that the disease may be well studied by medical men, with the hope of finding a cure.—*Sunday School Hive.*

MAP OF
WESTERN MOROCCO
ative of explorations carried on by
JOSEPH THOMSON
1888.
Scale, 1:1,500,000 (24m = 1 in.)
0 5 10 20 30
REFERENCE.
The Tints express the Elevation above Sea Level thus:-
12000 Ft and upwards
From 9000 to 12000 ft
" 6000 " 9000 ft
" 3000 " 6000 ft
" 1800 " 3000 ft
" 1200 " 1800 ft
" 600 " 1200 ft
" Sea Level " 600 ft
The Author's Routes
10°
7°
30'
32°
31°
30°
Sidi Isha
Ras el Hadid
Sidi Y
Mogador
Mogador I.
Diabat
Leher
Ras Tegriwelt (C. Sim)
Ida Gert
Nzela
W. Tidsi
Ida Ise
C. Tefelneht
W. Ida Guhul
Kasba
Ida Guhul
Ait
Karabet
W. Ait Amer
Ras Aferni (C. Ghir)
Nzela
Ida
Agadir Irir
Fonti
100 Fathom Line
R A N
D E M N A T
Demnat
Dra
Tezert
Enzel
Twako
Ait Madlah
Tasemsa
Tafrint
J. Taseraft
Zarktan
Tergi gan
J. Glaui
Tiulat
Tizi n Telsirt
Tamrirt
Tikfamwalt
J. Lbugumt
J. Umla
Kasba
MOHARAM
J. Tekuet, 7357
Tasgelt
W. Tidili
Tikirt
W. Idermi
Tagenzalt
W. A. Tigdi
Tasenaut
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G.P.

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

SOME IMPRESSIONS OF MOROCCO AND THE MOORS.—(*See Map and Illustrations*).

By Mr. JOSEPH THOMSON, F.R.G.S.

[Addressed to the Members, in the Memorial Hall, April 9th, 1889.]

AT midday on the 17th of March, 1888, we were still in Gibraltar, still on the threshold of Europe. We were wandering through streets and lanes whose English names seemed as much out of place as did the blue-costumed policemen and red-coated soldiers among the swarthy Gibraltarians and black-eyed Spanish girls. At every step we could not but be aware that we were still under the British flag.

On the evening of the same day we were landed on the shores of Africa—not, however, Africa as I had known it elsewhere, black, barbarous, and breechless, but Africa with an Oriental glamour and gilding in which the Negro and the European alike seemed extraneous elements. We passed up narrow, tortuous lanes, formed by whitewashed buildings of meanest aspect. Here we met grave and portly Moors. Dignity and ease were in their step, and a holy assurance of heaven in their countenance. Their haiks, toga-like, embraced their ample persons in creamy folds, and with an artistic and truly classic grace, and their ample turbans formed appropriate head-gear, overshadowing their tanned and bearded faces. Here, too, we saw women, veiled from head to foot, waddling along like animated bundles of clothes, but withal carrying something of the mystery and glamour of the unseen about them.

For anything we saw around us, we might have been transported to the other side of the globe instead of across a few miles of sea, so complete and abrupt was the transition from the sights and scenes in the morning.

In the days which succeeded, we saw much to instruct and delight us, but nothing excited our wonderment more than the completeness of the unseen barrier which cuts off the Moor from all other people.

Here we have a town almost in touch with Europe, and within earshot of the morning guns of a British garrison town, inhabited by a people of no small intelligence, and who daily come in contact with Europeans, politically, commercially, even, to a certain extent, socially, and who yet are absolutely unaffected by the influences more or less directly brought to bear upon them. Nowhere can one see the slightest evidence that the Moor's dress, his manners or customs, his ideas, religious or secular, or any other aspect of his life, have been modified in the slightest degree. He seems to say to the European, "Your ways are not my ways, nor your God my God. Yours may be the riches and the influence in this world, but ours will be the power and the glory hereafter." So complete, in fact, is the isolation, that the Moor might be an inhabitant of another planet, whose mental and physical constitution rendered it impossible to be influenced by extraneous agents.

These first feelings of wonderment, which took possession of us almost from the day we landed at Tangier, only deepened and intensified with the further and wider knowledge of the months which followed. Everywhere we were confronted with problems, social, political, and religious, which completely overshadowed, in point of interest, the geographical work we had in view.

That work was the exploration of the Atlas Mountains. (See Appendix.)

For centuries Morocco had been more or less the scene of European warlike or commercial enterprise. The Romans had held sway over a considerable area in the north. In later years the Portuguese had laid an iron hand upon its western littoral, and there left striking monuments of their former greatness and commercial vigour. The British, too, had had a footing in the north, and our national flag had waved over Tangier. Nor had the Spaniards been without a finger in the pie—a finger which they mean to retain there pending the hour when they shall endeavour to push in the whole hand and arm, and, grasping hold of the inheritance of the Moor, wipe out the disgrace of the Moorish domination in Spain, the memory of which still rankles deep in their hearts.

In spite, however, of all these conquests and settlements, as well as of the more widely-spread ramifications of commercial enterprise, not to speak of the insatiable curiosity of the more or less scientific traveller, Morocco, though at the very threshold of Europe, has remained the least explored of countries. Till this day, large areas in the very heart of the empire remain as completely unknown as the most out-of-the-way corners of Central Africa.

Religious fanaticism has had much to do with the continuance of this remarkable state of things; but a not unimportant factor also has been the growing fear of the despised Christian. The Moors know too well that several European nations only await their opportunity to pounce down upon them. To evade this disastrous result their sole policy is passive resistance and complete isolation. Every traveller is to them not only a hateful individual, but a spy, studying the fertility of their land, and their mineral riches. To the government he also appears as a source of direct danger—for he may be killed in a sudden fanatical outbreak, and bring down on Morocco the vengeance of his country.

To penetrate this barrier of religious fanaticism, hatred, fear, and official obstruction, to strike away from the oft-traversed tourist routes, and penetrate the unknown provinces, but more especially to explore the little-known and reputedly-dangerous Atlas Mountains was the congenial task I had set myself.

In what I have to say I do not propose detailing to you how far we were successful in this geographical enterprise. I shall rather ask you to follow me from place to place, only so far as it may serve to carry us along, having ourselves full liberty to stop by the wayside, and take note of the more generally interesting problems already alluded to, which present themselves to the observant traveller.

Accompanied by a young friend, Mr. H. Crichton-Browne, I left Tangier on the 5th of April, by steamer, *en route* for Mogador.

At Casablanca we landed, and continued our way overland, accompanied only by one servant and a soldier guide.

Let me describe to you the sights and scenes which characterise a typical day's march over a greater part of central Morocco.

Leaving Casablanca, we enter a breezy and grassy expanse, which stretches away southward in undulating, treeless, monotony—a few herds and flocks grazing to right and left, and a varied succession of country people on donkeys, or trudging along, whilst camels alone attract our attention. Gradually the plain rises into a palmetto-clad and boulder-strewn ridge, from the top of which we take our last view of Casablanca. Turning to the south, we see little promise of an interesting ride. As far as the eye can reach the country spreads itself out in low grassy undulations, unrelieved by rock or tree, by hill or valley. The sole conspicuous objects are the glaring whitewashed tombs of saints, called kubas. There is not village or hamlet to give an inhabited air to the scene, though, here and there, low black patches and the curl of faint blue smoke show where nomadic Arabs have pitched their tents. At places, too, the rich dark loam is being turned over by primitive wooden plough, drawn by an ox and ass, or by mangy horses, guided by bare-legged and shirt-clad labourers. Further off, shepherds tend their flocks, not uncommonly beguiling the time with such simple harmony as they can draw from reed-made pipes.

But what chiefly attracts the attention is the floral display which presents itself to our delighted gaze. The whole country seems a glorious, natural flower garden. Nowhere, in field or conservatory, can anything more rich or profuse, and withal so extensive, be seen as the exhibition of flowers on these fertile undulating plains in spring. Poppy, marguerite, and marigold, and fifty other familiar and unfamiliar flowers, vie in glory of bloom, producing exquisite kaleidoscopic combinations of rich colours on the greensward. Acres of bright yellow marigold contrast with the crimson-flushed poppy. More commonly they are intermingled and sprinkled with the added hues of white, and pink, and blue, revealing in their gorgeous and striking combinations the sources from which the Moorish artist in wool derives the ideas expressed in his brilliantly-coloured carpets. Through miles of this exquisite flower-land we jog along, finding continually some new species or fresh touch of colour to notice in some tract apparently more richly covered than anything we had yet seen. The Arab tents which appear here and there look Arcadian and ideal in the extreme, with their frisking goats, playing children, and barking dogs. Afterwards we discovered that other things skip and swarm about these besides goats and children, and that the Arcadian life of the owners is no more than seeming, for a more oppressed and miserable race does not exist.

At midday we halt to rest and lunch. We have no need to spread our carpets, for a more beautiful one is already laid. On this we throw ourselves, to be almost hidden among nodding marguerites and marigolds, while the air is filled with the fragrance we crush out of the flowers we lie upon.

A little later on we resume our march, and ramble cheerfully and rapidly along the footpath that serves as road, and which winds and curves through a more bush-clad country, where the friendly rivalry of arbutus, myrtle, and flowers only serves to enhance each other's beauties. Towards evening we leave behind the almost uninhabited grazing grounds and bush tracts, and enter a well-cultivated district, rich with fine crops of fast-ripening barley. Whitewashed houses, not unlike Irish cabins, though more clean and comfortable-looking, stand here and there among the fertile fields. On our left rises the extensive ruins of a kesbah or castle of a former kaid or governor, who, being suspected of having laid up treasures on earth, had been cast into prison till he had disgorged his wealth to the Sultan, his castle being meanwhile demolished in search of hidden money.

Towards sunset our soldier leaves the main track, and guides us to a plain quadrangular group of buildings, which, he informs us, is the fundak or Government caravansarai. The very name caravansarai is sufficient to fire our imaginations and hurry us faster along. A look inside is sufficient to dispel all these pleasing illusions. An ordinary farm dunghill would be simply heavenly to the cesspool we are asked to pitch our tent in. After a stormy scene with our escort, who insists that we must stay inside or else we shall be murdered, we get our own way, and, passing a little further on, we pitch our tiny tent near a duar or tent village of some Arabs.

For a time, after being refreshed outwardly and inwardly, we sit and talk. We commiserate our less fortunate friends at home, who are compelled to go through the same round of monotonous, uninteresting duties, knowing nothing of the romance and the delights of camp life in Morocco. At length, tired with our fifty-miles' ride, we wrap ourselves in our ulsters and stretch ourselves out, a change of clothes for pillows.

At length Morpheus coquettes with us, and spreads the allurements of semi-unconsciousness over our senses; but just as we seem to be on the point of sinking into sweet and blissful slumber, we are, time after time, ruthlessly hauled back to hated wakefulness. Scores of dogs from our own and the neighbouring duars, attracted by the rich scents which emanate from our stewpan, gather in hostile and hungry bands around our tents. Having conflicting interests and deeply-rooted hates they ever and anon set upon each other with savage yells and howls, making night truly hideous. Their wild, hyena-like clamour rises and falls, comes and goes, in the most exasperating manner. Now and then, amid the fearful din, the strident voice of El Hadj Hamad, the servant, can be heard hurling fearful expletives at the worrying pests. Sometimes he throws stones, and, if I mistake not, the cooking utensils, when, attracted beyond prudence, they venture too near his belongings.

The dogs unfortunately are not the only element of riot and disorder. Our horses, picketed close to our tent, after a little rest, develope decidedly combative feelings, and manifest an irritating desire to get within fighting distance. Neither ropes nor hoblets are sufficient to restrain their ungovernable impulses, and more than once they break loose and rush at each other with fierce screams, kicking and biting furiously, to the imminent danger of our tents and persons. Then is heard the full vituperative power of the Arabic language as we run to separate the infuriated brutes; then disappears the cold chicken-bone in the ravenous jaws of a wretched dog; and then we discover that our Moorish travelling has its drawback, and that life at home has at least some advantages. For over four marches we continue through country such as I have described, touching at the interesting coast towns of Azamor, Mazagan, and Saffi. For nearly 150 miles we do not see a single tree worthy of the name, nor do we cross a stream with the exception of the Azamor river, neither did we see a hill. Nowhere are we tempted to halt to admire anything approaching a picturesque landscape. Our route lies over low rounded ridges and more monotonous flat expanses. We passed from areas ablaze with flowers to tracts of bush and palmetto, or we traversed rich plains of black loam covered with splendid crops of grain alternating with fields left waste and desolate.

With our arrival at the Tensift, south of Saffi, all this changes. We here enter the area affected by the uprising of the Atlas Mountains. The gentle undulations of the central provinces break into picturesque irregularities of hill and dale, producing a refreshing variety of surface features, making our route less easy but infinitely more interesting. The country also is no longer treeless, for everywhere the remarkable oil-bearing argan tree enhances, by its dark green foliage and gnarled branches, the varied features of the landscape. To this district the small isolated range of Jebel Hadid, or the Iron Mountains, gives an air of dignity.

A less agreeable feature in the province of Shiedma, and more or less characteristic of all the southern provinces of the empire, is the nature of the soil. The rich loamy plains of Shawia, Abda, and Dukalla, here become for the most part stone-strewn sterile tracts, due to a crust formed by the cementing of the calcareous particles which compose the major part of the surface soil. This singular crust presents an adamantine surface to the husbandman, and practically seals up the ground, making agriculture an arduous and but scantily repaid labour. Much of it, crust bound and largely clad with thorns and acacias, defies the efforts of the labourer to wrest even the barest necessaries of life from its barren bosom.

With our arrival at Mogador on the 17th of April commenced the preparations for our hazardous expedition to the Atlas. As travelling in Morocco was a new experience to me, and the Moorish character an unknown quantity, I judged it best not to plunge straight into the interior until I had satisfied myself to some extent on these points. For this purpose we determined to return to Saffee by a circuitous route through Shiedma.

It was well that we did so, for the few days devoted to the trip revealed such a state of things among our men that we were almost reduced to the verge of despair. Their laziness, insolence, gluttony, and deceit were quite a revelation to us, and we speedily saw that the first essential to our successful progress was the settlement of the question, who was the master? Our troubles were greatly intensified by the fact that not knowing the language ourselves we were dependant, in our communications with the natives, upon one of our servants, who afterwards proved to be the greatest scoundrel in our party. After a most unpleasant struggle, and later on the engagement of a Jew interpreter on whom we could rely, we succeeded in asserting our position, but from first to last our own men were our worst enemies, whilst their laziness, intractable character, and persistent treachery, not only poisoned all the pleasure of our journey, but time after time thwarted and upset our plans when promising most success.

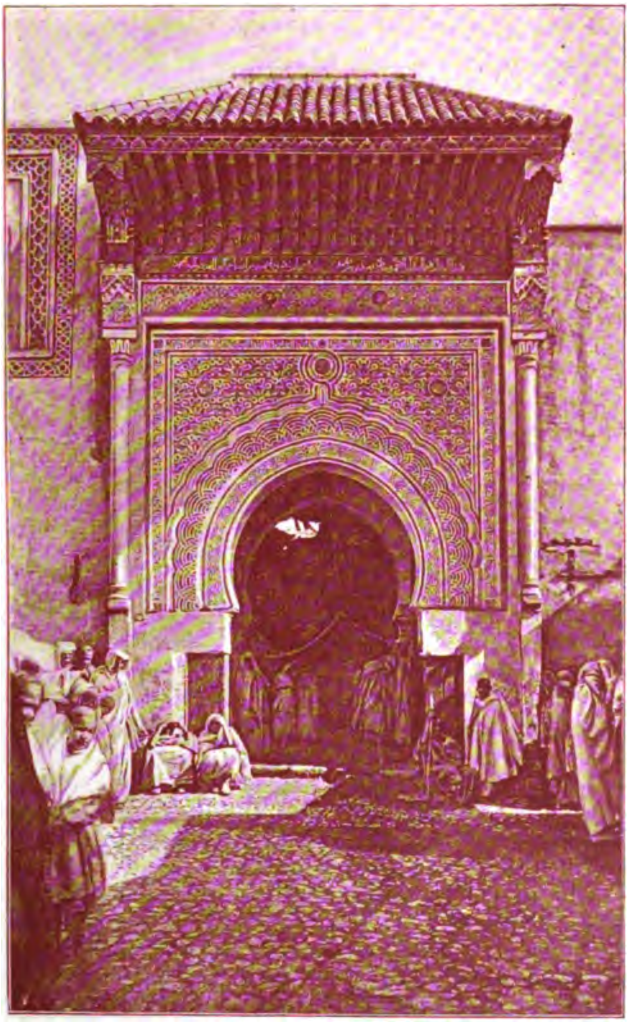
Our tour through Shiedma to Saffi calls for no detailed description, and we may pass over it in silence. On May 22nd we finally left the coast *en route* for the city of Morocco. Our way lay through the fertile treeless province of Abda, Bled Hummel, and Rahamna. Of the geographical features of these parts I shall not speak. Of more general interest are certain of the topics suggested to the mind of the traveller. Everywhere we are called upon to remark the wonderful fertility of these great plains and to speculate on the population they might feed if—if only the rainfall could be depended on, and the country enjoyed a certain measure of good government. In that if, however, lies the whole question. The rainfall cannot be depended on. There are no running streams, and water can only be obtained at very great depth. The result is that drought and consequent famines are continually occurring, and many are the harrowing tales the traveller hears about the deaths and desolation which ensue.

But even more hateful in its influence is the frightful misgovernment of the country. Nothing strikes the stranger more forcibly than the evidences of grinding oppression under which the inhabitants groan. Everywhere he sees signs of spoliation and rapine. The half-starved, weather-beaten countryman, living in squalid huts, which a Central African savage would be ashamed to enter, are but little better than slaves. The two guiding principles of the Moorish Government are that the country and the people exist solely for the good of the Sultan, and that the poverty and disunion of his subjects are his strength. These principles are carried to an almost incredible extent; neither life nor property are safe. The people are ground down to the dust with frightful regular and irregular exaction. The whole country is overrun by human leeches, called kaids, or governors, who suck its very life-blood, till, themselves full to the bursting, they are drained by the insatiable bloodsucker, the Sultan. In the midst of plains teeming with plenty there is little better than starvation even for the very few Arabs who remain on the soil.

The marvellous fact about it all is that few complaints are heard. The inhabitants, with thorough fatalism, consider that it has been so written, and who, they ask, can avoid God's decree? Only among the original Berber inhabitants is there any rebellion against the state of things which exists. From the earliest time many tribes have maintained an unceasing warfare against the Government, while others, more easily got at, have been conquered from time to time, only to break out again on the first opportunity.

To prevent any such insubordination among the Arabs, the Sultan is careful to keep them plundered of all earthly riches, as much to keep them helpless as to fill his own treasury. For the same reason, he fosters tribal hatreds and sows dissensions, to prevent any united action to resist his exactions. But for the absolute poverty of the people, and from animosities which exist between the tribes and Government, as well as the fatalist doctrines which have such a hold on the Mohammedan mind, the present Government would not last another year.

It is not, however, in a day, or a week, or a month, that any adequate notion is obtained of the terrible system of tyranny which holds the country in its blighting and paralysing clutches. It is so all-embracing, digs so deep down, and spreads in so many unexpected ramifications that the actual condition of things only dawns slowly on the inquirer, and then it seems incredible that such a state of misgovernment can exist for a day. Certainly not throughout the length and breadth of the Dark Continent is there anything to equal its iniquities. Not even among the most savage of Central African tribes is life and property less safe or held of less account than in Morocco. Nowhere is there such a total disregard for all the ordinary rights of man or the commonest rules of justice. For centuries it has been sinking deeper and deeper, crushed down by its frightful load of tyranny and oppression. How long it will last it would be difficult to say, for everything tends to keep up the blighting system. To talk of reforms is to talk to the idle winds. There can be no reform for such a state of things as exists in Morocco but the one drastic one of stamping the vile thing out, as one would stamp out a contagious disease. Morocco must either become absolutely a European province, or be placed, like Tunis, under the protection of a Christian government, sufficiently powerful to compel reforms, not merely to urge them. No number of conferences nor urgent representations of ministers will ever have the slightest effect upon the abuses under which the country is sinking to political perdition. As matters stand at present, the sole business of European ministers at Tangier is to counteract each other's influence, even when that influence is being exercised for the good of the country. Whatever one proposes the others oppose. To such an extent does this shameful spirit prevail that I was advised, on my landing at Tangier, to keep my plans of scientific exploration secret, as it



ENTRANCE TO ONE OF THE BUSINESS QUARTERS, MARAKSH.

(*By permission of G. Philip & Son.*)

was more than probable that some of the ministers of other countries would do what they could at court to get me stopped.

On the 22nd of May we entered Marakah, or city of Morocco. As we passed beneath the battlemented gateway which gives entrance to the city we were full of bright hopes and eager expectations. For were we not entering a city with a history—a city which had been the theatre of wars and sieges and the residence of sultans? Its very name threw a glamour over its yet unknown features, and connected it with all the past glories of the empire.

How different and disappointing was the realisation. As we wandered through street after street, and lane after lane, enclosed by red clay-built walls, we saw much indeed of the "havoc" but little of the "splendour" of the East. Here, as in the open plain, we were confronted at every step with evidence of a nation on a downgrade slide—of a people who had lost all earthly hopes and anticipations, who lived from hand to mouth, patient waiters on God's Providence. Morocco was a city grown slattern, very much out at the elbows, and utterly careless of its personal appearance.

It was difficult to believe that the Moors around us were the lineal descendants of the men who, with their irresistible war cry of "None but the one God," had swept across the north of Africa, and, pushing into Spain, had rolled like an impetuous wave to the very foot of the Pyrenees. It seemed incredible that the people who, at the very dawn of their national life, reared such works as the Alhambra, the aqueducts, bridges, and mosques, which to this day remain the chief wonder of southern Spain, are the same as those who are content in the present day to live in shapeless, almost unornamented, clay-built barracks, with no higher thoughts than the unlimited indulgence of their sensual appetites.

Throughout Morocco there is nothing more disappointing to the traveller than the signs of the decadence of the distinctive arts which in past times made the Moors famous. One naturally expects to find all sorts of beautiful and quaint objects, to see picturesque and enduring buildings, and get glimpses of the most delightfully fanciful interiors. That some such things existed in earlier days is made, every now and then, apparent as we wander through the town. But to know that an object is beautiful, that it shows careful and loving workmanship, and reflects the graceful fancy we associate with things Moorish, is also to know that it is old. In everything else we see there is evidenced a frightful degeneracy in genuine workmanship and artistic taste.

To the painter the enduring colours of other times are as much unknown as is his ancestors' skill in blending them in effective scrollwork. The stucco and wood carved arabesques are equally becoming things of the past, simply because there is no demand for them, and consequently the workmen are dying out with no others educated to replace them. The rugs and carpets are reflecting the same degeneracy. Aniline dyes of gorgeous hue have almost entirely replaced the enduring vegetable colours that were formerly employed, and with the colours the skill in effective and harmonious arrangement is alike disappearing. The beautiful glazed tiles, which were once the glory of the Moor, are now not made, except to a small extent at Tetuan. Fez still keeps up a certain reputation for coarse though bold and effective pottery, as also for beautifully-worked waistbands worn by the women; Rahat for carpets and embroideries; Mogador for brass trays and silver ornaments; and Marakah for various kinds of leather work.

There is no difficulty in detecting the cause of this frightful degeneracy. It is the notorious misgovernment which is at the root of this as of all other evils which are ruining the empire. What temptation is there for anyone to set up for himself a handsomely-built house, when the chances are that he will not be allowed to die in it, and that, sooner or later, it will pass into the hands of the sultan, and probably be demolished in search of hidden treasure? As little is he tempted to amass about him things beautiful—which in his heart he loves—in a country where security of property and common justice are unknown.

To show any signs of luxurious tastes, and of wealth to gratify them, would only serve to apprise the government of the fact, with the inevitable result of entailing on the owner a ruinous contribution or imprisonment, and probably torture, till such time as the authorities were satisfied that there was nothing more to be squeezed out of him. Then against the preservation of anything beautiful or artistic, militates the fact that there are no hereditary governors or sheiks, no powerful families, who might pass on their treasures from generation to generation.

Wealth of any kind will rarely remain two generations together in the same family before the sultan has swallowed everything in his omnivorous maw. To prevent this ever-threatening spoliation, the first idea of anyone who has amassed some money is to bury it. The amount of such buried treasure in Morocco, of which the secret has been lost, must be enormous.

An even worse influence than this system of wholesale plunder tends to the rapid deterioration of Moorish art and the disappearance of skilled workmen. These latter have now become so rare that the moment one is discovered to have greater capabilities than his companions he is immediately impressed into the service of the sultan or one of the governors—not, however, to be petted and honoured, and made much of, as was the good old fashion, but to be compelled to work for little more than the barest livelihood. It is not the making but the ruin of a workman to get a reputation for genius or cleverness in any branch.

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In spite of all its air of dilapidation, however, Marakah began to grow upon us when once we had got rid of our preconceptions. In the most unexpected places, often amidst tumbling ruins and all the signs of rapid decay, we were continually attracted by a picturesque nook or some interesting example of Moorish workmanship. Here it was a fountain, on which the artist of other days had lavished all the wealth of his Oriental imagination, and shown all his manipulative skill in stucco, wood-carving, tilework, and colour. There it was the horseshoe-shaped doorway of a mosque overhung with effective mouldings.

We got delightful glimpses of mosque interiors, too—all the more attractive because forbidden, and partaking of a spice of danger. These displayed cool aisles and beautiful wall decorations, shady colonnades, and marble panelled courts, with sparkling fountains.

It was not, however, in its architectural features that we found the special charm of Marakah. As in all Oriental cities, it was its people and its street scenes that gave the most picturesque effects. The very beggars carry their rags with such an air—they appeal to the passer-by in such a high-flown and impressive style—that they become not only objects of compassion but subjects for the artist.

The women, swaddled in their absurd blanket-like coverings, carry about with them something of the glamour of the shining Orient. But though veiled, they are not quite unseen either, for those beautiful eyes of theirs, sparkling with all their liquid brilliancy between black-tipped eyelids and long glossy eyelashes, transfix the gaze of the onlooker, and fire his imagination till he sees, not only beautiful eyes, but face and form, and all the other allurements of the sex to match.

Not least attractive were the substantial city men of Morocco, mounted on sleek quick-pacing mules, or the government officials on gorgeously-caparisoned and prancing barbs, while the weather-beaten Berbers from the Atlas, the gaunt fiery-eyed Arabs from the Sus and the desert, and the shrinking, money-grubbing Jew, all formed effective elements in the scene.

It was in the purely business parts of the town, however, that we found most to admire. Motley throngs of buyers and sellers, busy workmen and idle wayfarers, crowded the narrow thoroughfares, and, with the quaint box-like shops on either side, formed an exhaustless vista of picturesque scenes.

On our first visit to Marakah we were in no mood for an extended exploration of its varied features. The special work we had come to do lay among the Atlas Mountains, which loomed up picturesquely thirty miles ahead of us. We could linger about the streets with but little satisfaction while there was still a doubt whether we should succeed in penetrating the unexplored glens, or of climbing the snow-clad heights.

So far we had been on well-known ground, with no obstructions, and only the worries of one man to contend with. Beyond lay the unfrequented routes, the half-independent, half-savage tribes, and the region tabooed to travellers.

The scope of my paper will not permit anything but the hastiest sketch of the routes we followed, nor of the rich geographical harvest of new facts which we gathered.

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On the 27th of May we took French leave of Marakah, to prevent our plans becoming known, and consequently of being stopped or hampered with an obstructive escort. Going east, we reached the base of the mountains near Sidi Rehal, where we stopped for the night. Next day we passed on to Demnat. We made this charming town and valley our head-quarters for several days, while we made our primary essays of Atlas exploration. In these we were successful far beyond our expectations. We first ascended the glen of Wad Demnat to near the base of the central crest of the mountains, discovering the remarkable natural bridge aqueduct of Iminifiri. Here we saw the unusual spectacles of a fine stream flowing under a natural arch, which crosses from one side of the glen to the other at a height of 150 feet, near its mouth, while the same arch conveys a second stream, in the manner of an aqueduct, from one side of the enclosing mountains to the other, where it falls as a fine cascade.

On a second excursion, to a place called Tasimset, we crossed the lower ranges, and reached a point where we looked down on the glen and radiating tributaries of the Fess-aout, while above us loomed the main axis of the Atlas Mountains, rising like an impassable wall to a height of over 10,000 feet. At Tasimset we explored a remarkable series of artificial caves underneath a beautiful waterfall.

Encouraged by our success, we resolved to attempt the crossing of the main axis. From Demnat there was no frequented route across the mountains, so we returned to near Sidi Rehal, and by a stratagem succeeded in evading the sheik who kept watch and ward over the entrance to the glen of the Wad Gadat. There was much in the successful ascent of this romantic and rugged glen, and in the crossing of the central ridge by the pass of Teluet, which might claim our attention if this paper was either strictly geographical or narrative in its character. We safely reached the southern slopes, made an ascent of a mountain called Jebel Taurirt, and explored another series of caves, before we finally were compelled to return to the plains, all our hopes of penetrating further utterly squashed.

This was not done without a struggle by our party, resulting in semi-imprisonment for a time, and threats of a dungeon and chains. Nor were our movements unattended with danger. On one occasion I was attacked by some fanatical mountaineers, and had an extremely narrow escape with my life.

On getting back safely to the plain of Morocco from Teluet, we made a forced march to Amsmiz, as much to cut off all traces of where we had been as to hoodwink our men, who were always doing what they could to thwart us and prevent us getting into the mountains.

From Amsmiz we were successful in crossing the mountains a second time, exploring the province of Gindafy and the glens of the upper waters of the Wad Nyfis. Thanks to our men, however, and other causes, we were again prevented going further, and were compelled to return to Amsmiz by way of Wad Nyfis.

During this trip my friend was incapacitated by the dangerous sting of a scorpion. Leaving him at Amsmiz, I started off with only two men on a new adventure. We penetrated the glen of the Asif-el-Mel, recrossed the mountains, in the face of great dangers and hardships, and ascended Jebel Ogdimt, the highest peak in this part of the Atlas, reaching an elevation of 12,700 feet, nearly 2,000 feet higher than had ever been attained before.

During this ascent I had a very narrow escape of being shot; and on our return to the foot of the mountain we had to leave the district more hastily than agreeably.

After this trip, various reasons made it necessary for us to re-enter Marakah. Our intention was to have remained only a fortnight, but then we had not sufficiently taken into account that we were in Morocco, and our fortnight expanded into six weeks. Our time, however, was by no means spent unprofitably. We had more leisure to probe nearer the bottom certain questions which had interested us very much. One of these was the influence of Islam on the Moor.

The result of our investigations was far from encouraging. How different its effects in Morocco from what we had known them in the Sudan! There we had seen it burning with the old fire of its early days in Arabia, when it transformed a scattered congeries of nomad tribes into religious propagandists and the conquerors of half the semi-civilised world. Similarly, in Central and Western Sudan, it had commenced a new era of hope and progress to the Negro, and with the watchword of Islam a race of shepherd-serfs, called Fellani, had burst their heathen bonds, and established Mohammedanism as their religion, and themselves as the rulers of a region extending from Lake Chad to the Atlantic. But it was not alone a mere conquering force, leading men to battle and victory. It had proved itself a great civilising agent, raising the social status of the Negro, instilling the germs of morality into his darkened mind, substituting Allah, the one God, compassionate and merciful, for his old idols and fetishes, and sweeping away the gross mass of superstition and horrible practices which marked his state of barbarism.

But if in the Sudan we found Mohammedanism instilling a new life and vigour into barbarous races, and setting them on the road to spiritual, moral, and material advancement, in Morocco we found it doing quite the reverse. Here it was preventing all advancement, suppressing all higher and nobler impulses which happened to be alien to its spirit, cutting off the believer from from all outside genial influences, and acting as a blight upon his whole nature. Like Judaism in the case of the Jews, Mohammedanism had become to its Western adherents a petrifying crust, as incapable of expansion from the inside as of being penetrated from without. Superficially it presented a fair and seemly spectacle, unquenchable faith, scrupulous attention to ceremonial duties, and most absolute submission to the will of Allah, but underneath all was maggots and rottenness.

Mohammedanism had here proved itself to have that amount of good in it which could raise a degraded people to a considerable level of civilisation, and give the main impetus which made their arms all-conquering. Further than that it could not go. With the dying out of the first intense missionary enthusiasm came the dissociation of religion and morality—the petrifaction of the one and the rapid decadence of the other. The results of these two processes are seen in Morocco in their most advanced stage.

It was difficult to grasp the fact, which had been gradually boring its way into our minds with growing knowledge of Moorish life, that absolutely the most religious nation on the face of the earth was also the most grossly immoral. In no sect is faith so absolutely paramount, so unweakened by any strain of scepticism, as among the Mohammedans of Morocco. Among no people are prayers so commonly heard or religious duties more rigidly attended. Yet, side by side with it all, rapine and murder, mendacity of the most advanced type, and brutish and unnatural vices exist to an extraordinary degree.

These strange anomalies are not confined to any one class. From the sultan down to the loathsome, half-starved beggar, from the most learned to the most illiterate, from the man who enjoys the reputation of utmost sanctity to his openly infamous opposite, all are alike morally rotten. Punctilious performance of ceremonial duties, acknowledged acceptance of orthodox tenets, these are everything in Moorish religion. Moral conduct counts as next to nothing. Kindred views are not unheard of nearer home, but in Morocco they are carried to their utmost limit.

It was an interesting if revolting experience to witness a Moor reverently bending in prayer before the One God, compassionate and merciful, suddenly stop short in the midst of his orisons to scream a curse or some foul obscenity at a bystander who may have aroused his wrath. The Moor who would lose his character by eating meat not slain in the orthodox way would escape with small censure for foully murdering a man; and envy, malice, and all uncharitableness, with theft and adultery superadded, would be held as venal sins compared with failing to acknowledge the Prophet and the Koran.

The very force which made the empire great in the world has now, in its corrupt and degraded form, become the agent which will prove the empire's destruction. It has now become the symbol of the bitterest fanaticism, the rancourest hatred of all other peoples and religions. It glories in its ignorance and its old-world superstitions and ways. Chiefly through its influence, Morocco has become a noxious backwater cut off from the healthy current of advancing civilisation, and there it develops its poisonous germs, and collects its rotting, pestiferous weeds. . . .

Time will not permit me to do more than indicate in the briefest manner possible how we completed our travels in the Atlas and Southern Morocco.

We left the city on the 28th of August, to face once more the perils and hardships of the mountains. Our first object was to ascend the main chain by way of the Wad Urika. Here, however, we met with a serious reverse, and were driven back by armed mountaineers. Though scotched we were by no means killed, and we wasted no time in making another essay. This time it was by way of the Wad Reraya. Here we were more fortunate, and we succeeded in penetrating one of the two glens in which the valley divides south of Asni, and, ascending the central crest at a place called Tizi Likumpt, reaching an elevation of over 13,000 feet.

At this point there was much to tempt us to proceed further, but, all things considered, we resolved to return for the time being to the coast. The deepest loathing of Atlas travelling had taken possession of us, due for the most part to our eternal wrangling with our men. We had never been able to repose the slightest confidence in them. We had constantly been compelled to enact the part of slave-drivers, while their laziness, cowardice, gluttony, and treachery had driven us nearly frantic. With the natives our experience had been little more agreeable. We were never out of a revolting atmosphere of trickery, lies, treachery, and unutterable meannesses. If we had only had half a dozen good men and true we could have gone almost anywhere in the Atlas, and enjoyed the life thoroughly; but, as things were, we could stand it no longer, unless we could get back to Mogador and start afresh with a new set of men,

We accordingly returned to Asni, and on the 5th of September continued our way west, revisiting Amsmiz, and skirting the base of the range through the provinces of Inzuda and Duerani to Imintanut in Seksawa.

At Imintanut we were on the direct road between Morocco and Tarudant, the capital of Sus. We resolved to finish our exploration in the southern parts of the empire by a visit to this wild and reputedly unproductive region. In this adventure we succeeded, and reached Agadir safely. We thence skirted the coast back to Mogador, which we reached on the 16th September.

IN DISGUISE.
From Travels in the Atlas and Southern Morocco, by JOSEPH THOMSON, F.R.G.S.
(By permission of Messrs. G. Philip & Son.)

Having secured a new set of men, we continued our way north to Casablanca, with the object of making Fez a centre of exploration for the surrounding region. Our plans, however, came to nought, as I had the misfortune to be summoned home to take part in an expedition which never came off, and so prematurely ended my work in Morocco.

APPENDIX.

Report of the Committee of the British Association, consisting of General J. T. Walker, Mr. H. W. Bates (Secretary), General R. Strachey, Mr. W. T. Thiselton-Dyer, *and* Professor W. Boyd Dawkins, *appointed to investigate the Geography and Geology of the Atlas Ranges in the Empire of Morocco. Report to the Committee, by* Joseph Thomson.

In laying before the General Committee of the British Association a general report on the results achieved by my expedition to the Atlas Mountains, I gladly take the opportunity of cordially thanking the Committee for its substantial and welcome grant of £100 towards the expenses of the work.

Briefly stated, I left England on March 9, 1888, and returned home in October of the same year, my explorations prematurely, and, as it turned out, quite unnecessarily, cut short by a summons to take command of an expedition for the relief of Emin Pasha.

In summarising the results of these seven months' travel in what Sir Joseph Hooker describes as the most difficult of all countries to explore (an opinion in which I heartily agree), it will perhaps be well to consider them under their various heads of Geography, Geology, &c.

I. *Geography.*—It is unnecessary to dwell on my travels in the more frequented parts of Morocco. New ground was first touched on my arrival at Demnat among the lower ranges of the Atlas.

From Demnat I made two excursions across the secondary heights of the great range, on both occasions reaching close to the central crest. By these trips I was enabled to map out the upper course of the Wad Demnat, and partially of the Wad Tessaout. Among other discoveries of an interesting nature in this region, I may refer to the remarkable natural bridge aqueduct of Iminifiri, which spans a deep narrow gorge, and not only carries a stream of water from one side to the other, but is also used as a bridge by the inhabitants. Noteworthy also were some extensive ancient ruins on the top of Mount Irghalnsor, and a great series of artificial caves at Tasimset.

My next line of exploration lay up the glen of the Wad Gadat from Sidi Rehal. By this glen I penetrated to the very heart of the Atlas, and crossed to the southern side of the mountains by the Tizi-n-Teluet. From the valley of the Teluet I made several minor excursions, in one of which I ascended Jebel Taurirt (11,168ft.), the first occasion on which the summit of the Atlas had been reached in this part.

Proceeding further west, a new attempt was made on the mountain fastnesses from Amsmiz. Following the Wad Amsmiz to its source, the Atlas was again crossed by the pass of Nenieri (9,962ft.), the head-waters of the Wad Nyfis were explored, and the southern slopes reached by penetrating the canyon of the Wad Agandice. Returning to the Plain of Morocco, the lower mountain course of the Wad Nyfis was traced out, and Amsmiz reached by the Tizi-n-Gerimt (7,215ft.).

Further west from Amsmiz the Asif-el-Mel offered a new means of access to the main chain. This glen I explored as far as was practicable, and then, leaving it, crossed by a new pass, the Tizi-n-Nslit (9,715ft.), to the head-waters of the Wad Nyfis, from which I made the ascent of Jebel Ogdimt (12,734ft.), the highest point of the Atlas west of the Wad Nyfis. Amsmiz was again reached by traversing the lower ranges.

Six weeks were unavoidably passed in the city of Morocco, the time being profitably enough spent in a study of the social and political life of the Moors.

On leaving the city an attempt I made to penetrate the glen of Wad Urika failed.

I was more fortunate by way of the Reraya. The glen of its principal tributary, the Wad Iminnen, was followed to its head, from which an ascent of the central crest was again achieved at the Tizi Likumpt (13,150ft.). From this point the Tizi-n-Tamjurt could be seen to rise 1,500—2,000ft. higher, being probably the highest peak in the entire range.

From Reraya I passed on to Imintanut, from which I made my final passage of the range, and determined to my satisfaction that the Atlas Mountains properly so called end at the Asif Ig, thirty miles from the coast, the further continuation of the elevated land being in the form of a triangular plateau 4,000—5,000ft. in height. From Agadir, where the coast was reached, the base of this triangular plateau was skirted as far as Mogador.

From Fez as a centre it had been my intention to make a series of trips into the mountains, similar to those undertaken from the city of Morocco; but the summons already alluded to stopped me *en route* at Casablanca, and prematurely put an end to my explorations.

Such as it was, however, from what I was able to do, a clearer and more exact idea of the Atlas Range west of Demnat has been obtained, and its glens and mountains mapped with some approach to scientific accuracy by means of astronomical observations, careful triangulation with the prismatic compass, and route protraction with the ordinary compass. The central crest of the range has been reached at seven independent points, and heights attained exceeding previous travellers as much as 2,000 ft. Several new glens have been explored, and six passes crossed, and generally much new light has been thrown on the physical configuration of the Atlas. On these points it is unnecessary here to enter upon further detail, as I have the honour to forward along with this report the paper and map submitted to the Royal Geographical Society.

II. *Geology.*—Turning to geology, I am happy to report that, in spite of manifold difficulties and obstacles, I have been able to gather together sufficient material from which to construct a geological map of the Atlas Range between Demnat and the Atlantic. With the exception of the work done by Maw and Hooker in 1872, absolutely nothing has hitherto been done to throw light upon the geological structure of these mountains. The comparative absence of vegetation, and the numerous deep gorges and glens cutting right into the heart of the range, in some sort went to counterbalance the incessant espionage and suspicion which dogged my every movement, and made the collecting of specimens an impossibility.

The results of my geological investigations have been embodied in a paper on the Geology of the Atlas and Southern Morocco, which, along with a number of diagrammatic sections and a map, I propose to lay before the Geological Society of London.

Briefly stated, my explorations of the mountains between Demnat and the sea show that they consist—

1. Of a central core or nucleus of metamorphic slates and crystalline limestones, at places much disturbed by intrusive bosses, dykes, and veins of porphyrites, basalts, and diorites.

2. Of an enormous series of red and purple shales, marls, and sandstones, forming the great mass of the chain, at some points, as at Taurirt, rising to an elevation of even 11,000ft. These, as far as can be ascertained, belong to the cretaceous series.

3. Of an upper series of cretaceous cream and grey-coloured limestones and sandstones, with fossils at places, among which have been determined *Trigonia*, *Arca*, *Rhynchonella*, *Astrea*, *Gryphæa*, *Astarte*, and *Lucina*. These series attain but a small development in the Atlas, as compared with the lower series, and are to be found only in the lower outer mountain terraces or steps. They are characterised by numerous intrusive bosses and great dykes of amygdaloidal basalts, which break through them along the whole length of the mountains from Demnat westward. In the plateau of Southern Morocco the red shales and sandstone series are masked by the limestones, except where some disturbance has brought the former to the surface.

4. Of later formations nothing has been satisfactorily determined. Of glacial deposits there were little more than indications at the heads of some of the glens, and at one or two places in sheltered nooks, as in the glen of the Wad Nyfis. Slightly more important accumulations were observed in the valley of Gindafy, Wad Nyfis, and in the glen of the Urika. Moraines were detected between the Wads Gadat and Misfiwa; and in the Valley of Teluet. On the Plain of Morocco transported boulders were remarked. Upon the whole, evidences of glaciation were insignificant, and in those parts I explored I saw nothing anywhere in any way comparable to the enormous deposits described by Maw, of the soundness of whose conclusions as to their being of glacial origin I have the gravest doubt.

III. *Botany.*—On the botany of the expedition I have little to say, beyond explaining the extreme smallness of the collection brought back—a list of which, drawn up at Kew, accompanies this report. The whole of the time spent in the mountains was in the very driest and hottest season of the year, when for nearly eight months scarcely a drop of rain falls. The consequence is that the mountains, even to the highest points, are quite bare, and only along the courses of the streams are any plants to be found. I left Morocco just as the first autumnal rains began to fall.

Very much the same remarks apply to the collection of beetles. A list of specimens secured is appended.

[For further particulars on the Geology, Botany, &c., of the district, see Report of the British Association for 1889.]

PREHISTORIC CHAT MOSS, AND A NEW CHAPTER IN THE HISTORY OF THE MANCHESTER AND LIVERPOOL RAILWAY.

By Alderman W. H. BAILEY (with three illustrations).

[Addressed to the Members in the Library, April 17th, 1889.]

CHAT MOSS is in the Irwell valley, bounded on the north and east by the highlands of Patricroft, Worsley, and Astley, on the west by the river Glazebrook, and on the south by the river Irwell, which immediately changes its name to the Mersey. On the opposite side of the valley, near Partington, is Carrington Moss, and similar moss lands or lagoons exist extending along the south side of the valley to the tidal estuary of the Mersey. St. Chad, of Chester, was Bishop of Mercia in 669, and had dominion over an extensive tract of country from Manchester to Chester, and all lands between the Mersey and the Dee; and it has been said that this is the origin of Chat or Chatley Moss.

Most writers assert, with but little evidence, that the moss was formerly an extensive forest. It is five miles long from east to west, and about three miles broad from north to south.

According to Baines, the forest of Chatley must have disappeared before the Norman conquest, as the Domesday Book only gives in the hundred of Salford very much less forest land than the entire of Chat Moss, as the forests of Horwich and Blackley were equal to nine miles long and five and a quarter miles in width alone, which is about the area of forest lands of the district recorded in that survey.

Underneath the moss the soil is of a sandy nature, and below this is found boulder clay; and although I am not in possession of sufficient information to lead to a definite conclusion, I believe that a forest did not exist to any considerable extent on Chat Moss in the ancient days. We have sufficient evidence to show that it was formerly a great inland lake, probably with forest trees on the margin, and that it was fed by the Irwell and subjected to occasional inundations of tidal water from the Mersey, and that the outlet of this inland lake has in course of time become impeded by wind-blown sand driven from the Mersey estuary by the western gales.

This wind-blown sand not only impeded the drainage of this inland lake, but it has from time to time changed the course of the Irwell as well as that of the Mersey. The enormous amount of clean sand, absolutely free from pebbles or boulders, laid bare by the excavations of the Manchester Ship Canal, in the vicinity and immediately below Chat Moss, I think, is convincing testimony of this. This sand would effectually impound the drainage of the small rivulets and water-courses from the upper lands of Patricroft, Worsley, and Astley, the water from which before went into the river through the lake, which would probably extend right across to the Carrington side of the river to the high lands of Lymm, and would be in shape similar to the great Mersey Bay, lower down the stream, into which the Ship Canal enters, which I will call Eastham Bay.

The accumulation of rank vegetation would accelerate the impediments, and in course of years the whole district became a moss, which I would venture to suggest was years ago a great inland lake. That the river has formerly been much deeper we have evidence in the discovery of the old boat in the cutting of the Ship Canal a few days ago.* This boat was found fully twenty feet below the present bed of the river, in the immediate vicinity of Chat Moss, at a place called Salt Eye cutting.

I have not been able to get the exact levels all over the moss, as it is difficult to obtain the information. I, however, find that in some places it is 150 feet to the sand, and the depth varies to 50, 30, and 25 feet. The greatest depth at present known is at a point not far from Astley Station, on the London and North-Western Railway, indeed at one place there it is 180 feet deep. This places the level at the bottom far below tidal water, as even a depth of 50 feet places it much below the tidal water coming up to Warrington.

The success of the works of the Bedford Level Drainage on the east coast caused much attention to be paid to similar lands in other parts of the country. It will be remembered that this great work commenced in the reign of Charles the First. Many thousands of acres of land have been reclaimed and made profitable to agriculture. In an old book I bought the other day (printed by Moses Pitt, at the Angel, in St. Paul's Churchyard, in the year 1685), a poet encourages such undertakings in the following verses:—

After long Tillage, it doth then abound
With Grass so plentiful, so sweet, so sound,
Scarce any tract but this can Pastures shew
So large, so rich, And, if you wisely Sow
The fine *Dutch* Clover, with such Beauty spreads,
As if it meant t' affront our *English* Meads.

Ye busie Gentlemen, that plant the Hop,
And dream vast gains from that deceitful Crop,
Or by manuring what you ought to Let
Thrive backwards, and too dearly purchase Wit,
Leave off these Lotteries, and here take your Lot;
The Profit's certain, and with ease 'tis got.

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* Lady Egerton discovered the old boat, when, accompanied by a party of friends, visiting the Ship Canal works. Noticing one of the steam navvies at work at a face in which appeared to be an old tree, her ladyship called attention to the fact that what was thought to be an old trunk of a tree was a canoe, and on examination the surmise was found to be correct.

Courageous Merchants, who, confronting fates,
Trust Seas and Pyrates with your whole Estates,
Part in this Bank, methinks were far more sure;
And ye, whom hopes of sudden Wealth allure,
Or wants into *Virginia*, force to fly,
Ev'n spare your pains; here's *Florida* hard by.

If therefore Gain, or Honour, or Delight,
Or care of Publick Good, will Men invite
Into this fortunate Isle, now let them enter
With confidence; since here they all concenter;
But if all these be choakt, and drown'd with flegm,
Let them enjoy their Sloth, sit still, and dream.

The trees found on the moss may have grown on the banks of the lake, or may have been washed down from the upper reaches of the Irwell, for many similar trees are continually discovered in the excavations of the Ship Canal along the whole course of the valley.

It may be of some interest to state that the moss is subsiding gradually. The farmsteads built on piles driven through the moss into the earth beneath are in some cases now ten feet above the level of the surrounding land, and those built upon the moss without the support of the piles are from five to fifteen feet below the surrounding level.

The geological formation of the strata at Chat Moss has been described by Mr. W. Brockbank, in a paper read before the Literary and Philosophical Society in 1886, and those who are interested will find in the journals of that society a very excellent description. In one place Mr. Brockbank found 17 feet of peat moss, 18 inches of sandy clay or loam, and then a depth of 26 feet 6 inches of boulder clay, and below that soft red rock. Generally the bed of the moss is sandy.

In consequence of the imperfect drainage, after long-continuous rains the moss became so full of floodwater many years ago as to cause its upper surface to move.

Leland thus describes what occurred in the reign of Henry the Eighth, as follows:—

> "Chateley More, in Darbyshire, is three or four miles in bredthe, and six miles yn length, sum way brast up within a mile of Morley Hall, and destroied much ground with mosse thereabout, and destroied much freech water fische therabowt, first corrupting with stinking water Glasebrook and so Glasebrook carried stinking water and moss into the Mersey water, and Mersey corruptid carried the roulling mosse part to the shores of Wales, part to the Isle of Man, and sum into Ireland. In the very toppe of Chateley More where the mosse was hyest and brake is now a fair plaine valley, as was in tymes paste, and a rille runnith in it, and peaces of small trees be found in the botom. Syr John Holcrofte's house within a mile or more of Morle stoode in jeopardi with fleeting of the mosse."

Also in the reign of Elizabeth, Camden describes Chat Moss as a swampy tract of great extent, a considerable part of which was carried off in the last age by swollen rivers with great danger.

In the 15th year of Edward II. the moss is placed in the manor of Manchester. This would be in the year of our Lord 1322, and in a description of the time Chat Moss is of the soil of the lords of Barton, Worsley, Astley, Workedby, and Bedford. "The tenants of these Lords had here Common Turbary, but no profit can be computed, because of the unfair quality of it."

We will now discuss the utilisation of the moss, and also some interesting work in connection with the railway which crosses it.

At the commencement of this century, William Roscoe, the poet, philanthropist, and banker, and, to use the words of Baines, "the elegant historian of Leo X.," was a very busy man. His genius was many-sided, for in the midst of active commercial pursuits he found time to lecture on the fine arts as well as on the national importance of introducing new food seeds, and on improved methods of agriculture. He composed odes, psalms, hymns, and sweet sonnets; wrote histories which are classical to the student of Italian literature, and as an orator and essayist he influenced the public conscience in favour of the righteous work of his friends, Wilberforce and Clarkson, the liberators of the African slave.

We also find him, with the sanction of Parliament, engaged in improving Chat Moss, dividing it into farms, draining it, and making it increase the food supply of this country. For more than a quarter of a century this energetic lover of utility and beauty devoted himself and his fortune to the cultivation of this morass.

In 1811 a poet pays homage to his achievements:—

> "Roscoe, to whose patriot breast belong
> The Roman virtue and the Tuscan song,
> Led Ceres to the bleak and barren moor,
> Where Ceres never gained a wreath before."

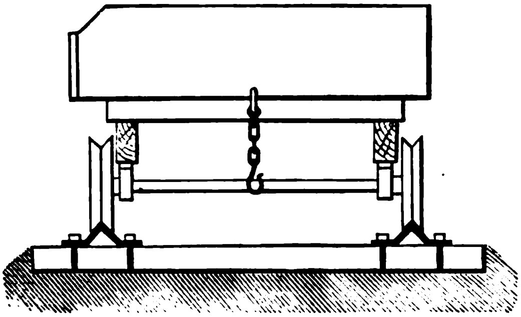
That hereditary qualities, that the features of the mind as well as those of the face may be transmitted, we have evidence in his illustrious grandson, Sir H. Roscoe, M.P. for Manchester.

There were small railways and we call them pioneer railway engineers before George Stephenson, and railways on Chat Moss before the Manchester and Liverpool Company's Act.

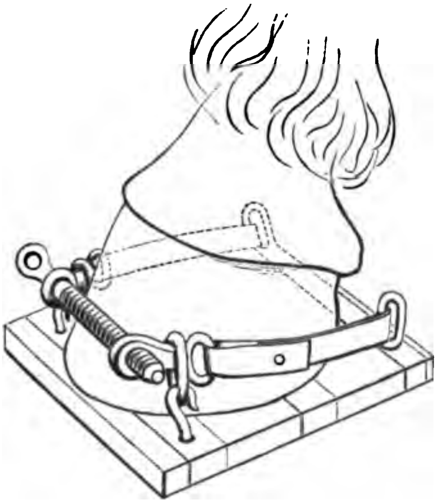
For the cultivation of Chat Moss Mr. William Roscoe was fortunate in obtaining, as steward, the services of Mr. Robert Stannard, who had had considerable experience on the Norfolk Broads and the cultivation of the bog land of that county.

Although it is outside the scope of our subject, permit me to say that the other day I picked up an old book 200 years old, in which is the history of the Bedford drainage. One of the contributors to the scheme was Sir Oliver Cromwell, whose estates were taxed for his share of the work. His nephew,

ILLUSTRATIONS TO PAPER BY MR. ALDERMAN W. H. BAILEY, ON A CHAPTER OF LOCAL GEOGRAPHY—CHAT MOSS.



Model of Mr. Roscoe's Chat Moss Railway.



The Chat Moss Horse Patten.

The Boat found in the Ship Canal near Chat Moss.
(By permission of the *Manchester Guardian.*)

Oliver Cromwell, was sent to Parliament by Cambridge burgesses to oppose the scheme, and thus became a public politician. The responsibility for the fate of that unfortunate monarch, Charles the First, may now be put upon the right shoulders.

Mr. Roscoe introduced railways, designed by Mr. Stannard, on the moss about the year 1816. The rails were of wrought iron, like a V inverted, the wheels of the worm being grooved similar to those used for rope pulleys. These railways were portable, because, being light, they were easy to move from one part of the moss to another. When thus engaged in developing the capabilities of the moss for agricultural purposes, the survey for the new railway commenced, about the year 1823, and Stannard has stated that when Stephenson saw the many deep drains that had been cut in the moss, and the wagons and tramways at work, he determined to go straight on over the moss instead of going round, which would have taken the railway one and a half miles nearer Worsley on the high land there. When the Bill had been passed, the directors gave Stannard the contract from Eccles to about three miles over the moss. The story of the enormous difficulties in connection with this work has been graphically told by Mr. Smiles, as well as by writers of local history, but the part that Stannard took in assisting Stephenson, I think, has not been related.

The first difficulty in not finding a bottom of Chat Moss was at a place called Blackpool Hole. Here the contractor tipped spoil for more than three months without making the slightest progress. Quantities of old sugar casks were chained together with brushwood and moss, but these came to the surface again at some distance from the side of the line. Altogether something like 70,000 cubic yards of spoil were tipped and disappeared at this place. At length the directors began to complain, and Stannard urged them to purchase a plantation of young larch trees, about half grown, nearly a mile distant from the line, at a place then and still called Botany Bay Woods, near to Worsley Hall.

Part of the wood was bought, the trees grubbed up by the roots, and dragged to the moss. These trees were laid together "herring-bone" fashion. Pieces of rock, spoil, earth, and loose material were then tipped upon this timber, and the desired effect was obtained. No further difficulties were then encountered, the remaining portion of the work being done by the ordinary side drainage and copping. The whole of the cost of the four miles was not more than £37,000, which was considered a large sum in those days, but which would not be thought very costly at the present time. The Directors allowed Stannard a penny per cubic yard extra for the expenses in the purchase of the plantation of Botany Bay Wood.

Mr. Edward Baines continued the cultivation of Chat Moss commenced by Mr. Roscoe, and there are now hundreds of acres under cultivation.

It may be of interest to state that the piecework rate of wages paid for the main drains of the moss was from 1¼d. to 1⅓d. per cubic yard, at which rate men earned from 3s. to 3s. 6d. per day.

During the controversy between Stannard and Stephenson, it seems there was a great difficulty in convincing Stephenson that the raft system was the best, as Stephenson always insisted that if they put spoil enough on the moss it would find a bottom. But although it did no doubt sometimes reach the bottom, it did not stay there, as the bog had a specific gravity like a quicksand, and assisted a flow from each side. But after many anxious discussions, Stephenson said to Stannard, "Have your own way." The contractor replied, "Yes, I will, but I want some money." Stephenson then said, "The directors have none, but I have £400 in one of the Liverpool banks of my own, and I will lend it to you." He got the money, and, with a fresh supply of wagons obtained from Manchester, and the weft and warp of the trees of Botany Bay Wood, he became successful in obtaining a foundation.

The history of Botany Bay Wood is of some interest, for here the first attempt to make a canal was made by Francis Egerton, the third Duke of Bridgewater. The wood is on the south-west side of Worsley Hall—that is to say, between Chat Moss and Worsley.

In the reign of George II., in the year 1758, an Act of Parliament was obtained to make a canal from Salford to Worsley, and thence to Hollins Ferry, on the River Irwell. The duke began operations in the bog land at Worsley, which is now Botany Bay Wood. After a short length was made, it was found not only that it would not hold water, but that it was impossible to get to the river in that direction, as Chat Moss was in the way. This short length drained the surrounding land and brought it under cultivation. Trees were planted, and Botany Bay Wood was the result.

Before 1758, Scroope Egerton, the first duke, obtained power from Parliament to connect Worsley Brook with the River Irwell. Only a portion of the work was made. The Salford Canal scheme was abandoned by the third duke, but by means of the Barton Aqueduct, constructed by Brindley, he crossed the river and made his canal to Manchester. Thus the mistake of the Duke of Bridgewater contributed to the success of George Stephenson three-quarters of a century after.

It will be remembered that I read a paper some short time since, in which I stated that at the Worsley Canal yard Fulton's first steamboat was built, and worked on the "Duke's Cut," or canal, in 1798, before he went to continue his experiments on the Hudson River, in America.

A few days ago, I saw in the office of my friend, Mr. James Lamb, what appeared to me to be a snow shoe, and on making inquiries I discovered it had been sent to him by Mr. Stannard's son—Mr. Robert Stannard. This is mentioned in Smiles's "Life of Stephenson," where it is said Mr. Roscoe adopted the expedient of fitting his plough horses with flat wooden soles or pattens to enable them to walk upon the moss land which had to be brought into cultivation. The pattens were fitted on by means of a screw, which met in front of the foot, and with the increased base thus given, horses were enabled, when fitted with these pattens, to walk about the moss. These pattens are still used on the farms at the moss.

This patten was introduced by Stannard. He also designed improvements in carts and wagons especially for the moss work, with wheels ten inches wide. He was the first to grow swede turnips on Chat Moss in the year 1817, and exhibited samples at Warrington Market dinner in that year. In 1816 he placed 100 Southdown sheep on the moss, obtained from Norfolk.

THE USES OF HISTORY TO THE ENGINEER.

The engineer's daily work and business is to remove obstacles and to triumph over difficulties. Despair is not in his vocabulary. With him muscle must always enter into partnership with brain; rationalised energy is his text; the history of great work his guide; therefore the contemplation of the bold patience, pluck, enterprise, and triumphs of such men as Roscoe, Stannard, the Dukes of Bridgewater, Stephenson, and Brindley is a profitable investment of time, for thus he may enlarge the orchard of his mind, and gather ripe fruits from trees planted by other men.

The story of man's labour on that triangular plot of land to which I have invited your attention, whose corners are Barton, Worsley, and Chat Moss, is to the engineer a perpetual textbook. Accompany me in imagination to Botany Bay Wood, and with our backs to Worsley Hall let us look to the left, and there we see Nasmyth's works, the birthplace of the steam hammer. Right in front is the Bridgewater Canal and Brindley's Aqueduct, at one time considered a wonderful triumph of the genius of an unlettered man. We also see one of the first railways ever made—the Manchester and Liverpool old line. There is also in sight another great work, the destinies of which are presided over by another Egerton—the Lord of Tatton—whose capacity and prevision entitle him to rank in our esteem as a worthy kinsman of the far-sighted public benefactors of his house and name, for in the far distance are the great steam navvies and a portion of the fifteen thousand men who are engaged in making the Manchester Ship Canal, using many huge tools, some of which dig and deposit in trucks a cubic yard of earth every four seconds. On the right are the smiling farms and market gardens of Chat Moss, created upon what was in ancient days a pestilential swamp, but now brought under subjection by Roscoe and his doughty knights of the field of the cloth of green and gold. Every buttercup and daisy seems to whisper praises, and each tree and blade of grass to pay willing and graceful homage and gratitude for its rescue from the wilderness.

> "Your voiceless lips, O flowers, are living preachers,
> Each cup a pulpit, each leaf a book,
> Supplying, to our fancy, numerous teachers
> From lowliest nook."

The picture is one that appeals to the lover of his country, and it also creates exultation in the mind of the engineer, for those imperial, intellectual, and moral qualities that have made us a great people yet live in men of our race and blood. Knowing and feeling this, we need not despair of the future of Old England, nor of attacks from any quarter on our commercial supremacy.

***Portuguese Explorations in Austral Africa during the Nineteenth Century.**—By J. Batalha-Reis, F.R.G.S.—From the fifteenth century to the present time the Portuguese have not ceased to explore those parts of Africa where they settled, causing the continent to be traversed from the coast to the interior, and from the Atlantic to the Indian Ocean. Outside Portugal the greater part of the Portuguese explorations of the nineteenth century are entirely unknown. Many geographers and the public in general believe, and repeat daily, that Portugal has done nothing in Africa since the sixteenth century, and that even then her travellers explored only the African coast. As ignorance regarding the chapter of geographical history is the origin of many and great mistakes in modern questions which are linked up with politics and international right, and with which public opinion is so intensely preoccupied just now, I judge it to be opportune to present an indication of the principal Portuguese explorations, at least, from the beginning of the nineteeth century, with the mention of the principal documents wherein the little-known literature of the subject may be studied. The chief Portuguese explorations of this century commence with its earliest years. In 1802, the expedition sent out by Colonel Honorata da Costa from Angola, which traversed the whole of the continent from the basin of the Kassai to the basins of the Lualaba, Luapula, Bangweolo-Bemba, and North Loangwa, arrived at Tete in 1811. In 1804 and 1805 Father Cannecatim published his dictionary and remarks upon the Bunda, or Angolense, language, and the narrative of his journeys in Africa. In 1831-1832 Monteiro and Gamitto explored the region between Lakes Nyassa, Bembo-Bangweolo, and Moero and the River Zambeze. In 1838-1848 Major Francisco J. Coimbra made his journey from Mozambique to Benguella, across Africa, and visited the lakes to the north of Kalaari. In 1843-1847 Joachim Rodrigues Graça went from Golungo to Bié, and thence to Lunda, almost at the eastern extremity of the basin of the Kassai. For many years Silva Porto travelled and explored the territories between the valley of the Kwanza and that of Liambye on the Upper Zambeze. In 1852-56 his expeditions travelled from the Upper Zambeze to the Upper Luangué, and between the basins of the Zambeze and of the Congo, passed to the south of Nyassa, and crossed, diagonally, the region between the Nyassa, the

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* This summary by the Portuguese Consul for Newcastle is a valuable document for reference, and the Members will be glad to have it at hand.

ROPRIETORS, M
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Rovuma, and the sea. In 1855-56 Montanha and Teixeira explored the terri between Inhambane, the Limpopo, and the north of the Transvaal. In 1877 ex tions of engineers were sent by the Portuguese Government to all their co provinces of Africa, and instituted the investigations and works which have go up to now, and from which the first railways in these regions had their comm ment, the more perfect knowledge of many of the regions being also due thereto 1877-78 Serpa Pinto crossed the continent of Africa from Benguella to Bié, and th by the affluents of the Kwando, to the Upper Zambeze, thence to the lakes nor Kalaari, thence through Bechuanaland to the Transvaal and Natal. In 18 Capello and Ivens went from the valley of the Cunene to the valley of the Kw and thence to that of the Kwango, which they investigated nearly as far as lat. In 1883 Antonio Cardosa visited the districts which lie between the river Save the upper valleys of the river Buzi. From 1880 Paiva d'Andrade has been expl the lands which lie between the Zambeze and the valleys of the Save and Buzi. 1884-1885 Capello and Ivens travelled right across Africa, from Mossamedes to rivers Cunene, Cubango, Liambye, Lualaba, Luapula, Lake Bemba, and thence to Zambeze, from near the mouth of the Kafue to the sea. In 1885-1886 Augusto doso traversed from Ibo to the Nyassa, and thence by the Shiré to the Zambeze. 1884-1888 Henrique de Carvalho and Sisenando Marques investigated the territ between the Kwanza and the Kassai in the districts of Lunda. These are the be known travels, but the Portuguese have undertaken very many less extensive more minute explorations than these, which are almost entirely unrecognised, cannot be mentioned in a brief abstract. They have thus covered with a wo uninterrupted investigation, from the sixteenth century up to the present t almost all the more important regions of Africa which can be found between a drawn from the mouth of the Congo to that of the Rovuma, and from that of Cunene to the south of that of the Limpopo. Many explorations, exclusively scien more limited, and more delayed in their results, have been and still continue t carried on. It was under the Portuguese Government that Welwitsch made his in tigations and botanical collections in Angola (1853-60), which are amongst the prin bases of all that has been published on the Tropical African flora. In 1864-5 Pinh Baiaõ collected important zoological specimens in the districts between the Lucala the Bengo in Eastern Africa, as did the two missionaries, Father Antunes in Hu and Father Barrozo in the Congo district. From 1864 José d'Anchietta has resi in the interior of Africa, and thence has sent the notable investigations and mag cent collections, for the most part zoological, which so enrich the Natural Hist Museum of Lisbon (Eschola Polytechnica), and which, in part, have been studied Professors Bocage (reptiles, birds, mammalia), J. A. de Sousa (birds), Felix Cape Guimarens, Osorio (fishes and crustacea), Mattoso dos Santos (myriapoda), M. Paul de Oliveira, A. Girard (insects), Count Ficalho (flora), &c., not to mention other th the principal Portuguese *savants*. From the said Anchietta are some recent geolog researches upon the Angola formations; and upon his collections, those of L. Malhe (1888), and those of other travellers, the investigations of Delgado, Choffat, and oth geologists of the Lisbon Geological Commission have been founded. The princi and less-known sources whence to study recent Portuguese explorations are: "Bolet e annaes do Conselho Ultramarino, Annaes maritimos e coloniaes;" "Annaes Marinha Portugueza;" "Boletins officiaes da Provincia de Angola;" "Boleti officiaes da Provincia de Mozambique;" "Boletins (and other publications) da Soc dade de Geographia de Lisboa;" "Journal das Sciencias Mathematicas e Naturaes Academia das Sciencias de Lisboa;" "Boletim (and other publications) da Commiss dos Trabalhos geologicos de Portugal;" "Memorias estatisticas das Colonias Port guezes," by Botelho, Lopes Lima, Bordalo;" "As Colonias Portuguezas," &c.—*British Association Reports*, 1889.

The Zambesi Delta.—Mr. B. D. J. Rankin has been engaged in making detailed examination of the river Zambesi from the junction of the Shiré river to th sea. He has described the physical characteristics of the delta, and more particular the Chindé river. This is one of the mouths of the Zambesi, and Mr. Rankin is o opinion that it is a stream of sufficient depth and constancy as to form a clear outle from the Zambesi. If all that is said of it is correct, the importance from a politic and commercial point of view of the Chindé can hardly be over-rated in connectio with free and unrestricted navigation of the great African river. For the trading companies now at work in the Nyassa lake region and the higher Zambesi, and its value to the new protectorate on the south of the frontier, the permanency of this opening in the delta must have very important consequences.

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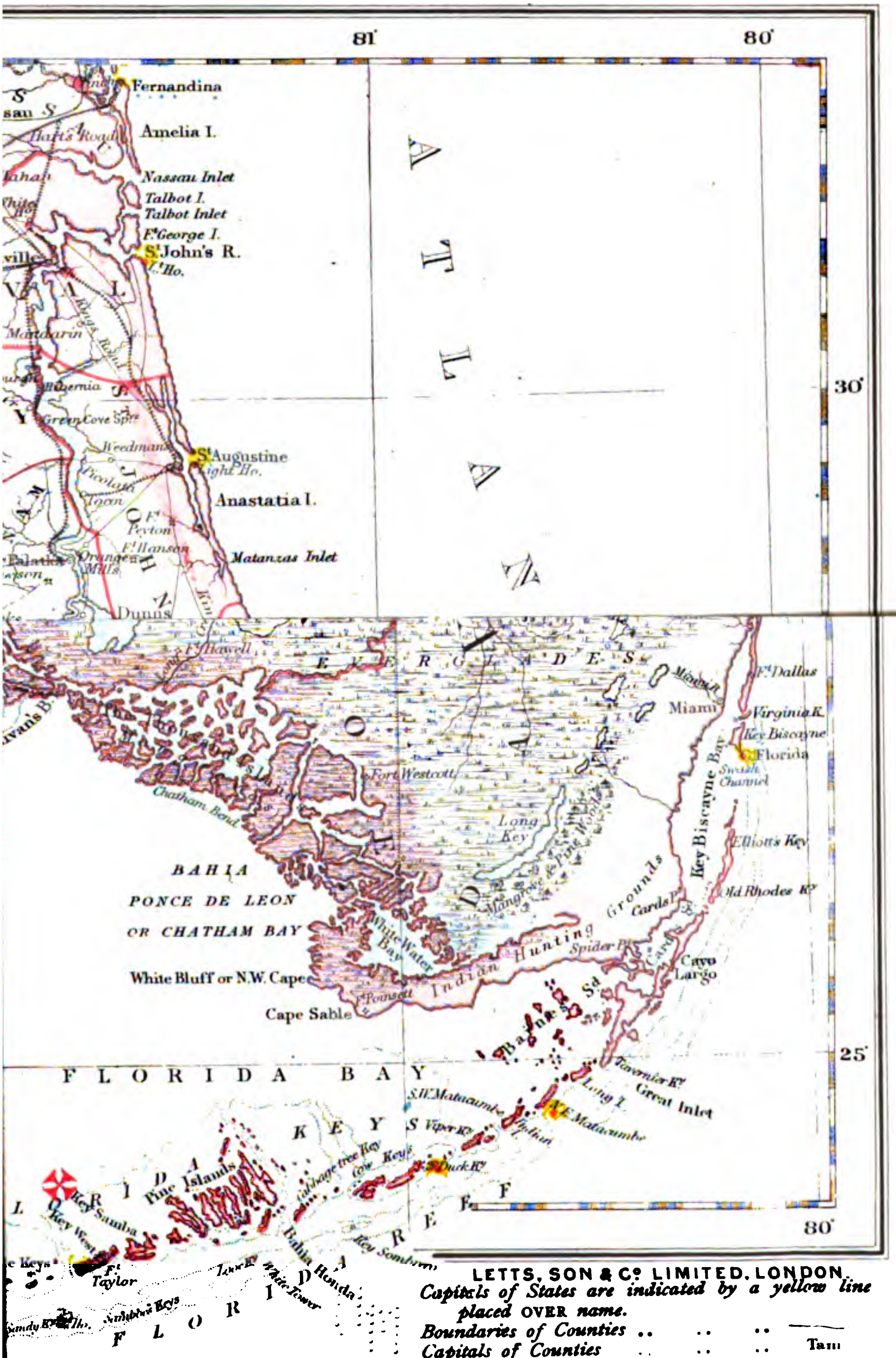

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Capitals of States are indicated by a yellow line placed OVER *name.*

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FLORIDA AND THE ENGLISH.—(*See Map.*)

By MR. ARTHUR MONTEFIORE, F.R.G.S.

[Addressed to the Members in the Memorial Hall, Manchester, Wednesday, May 1, 1889.]

THERE are few of the newer countries of the world which deserve from us such close attention as Florida. The English emigration to that state is of so high an order that it reaches a plane of importance out of all proportion to its numerical strength. Not only have our sons or our brothers, but also "our sisters, our cousins, and our aunts," migrated thither. English ladies as well as English men and English lads have found in that interesting and unique peninsula many a delightful home. Men of superior birth and education, and women to whom refinement has come by nature, no less than by breeding, have gone out from the dear old homes in this favoured but overcrowded country, and set their mark in no unmistakable manner upon this particular portion of the New World. The character of Florida belongs so peculiarly to itself—is, I may say, so idiosyncratic—that to thoroughly understand the conditions of life it imposes one must possess a knowledge not unlike that which Sam Weller had of London, and which, I need hardly remind you, was "both extensive and peculiar." With such a knowledge I have scraped an acquaintance, and I hope to-night to be allowed to utilise my experience and investigations in that State by introducing you to something of the surroundings and doings of the English in Florida.

Geography has been defined as the science which answers the question, "Where?" It would be highly improper, therefore, for me to explain to a Geographical Society the whereabouts of Florida. Most of us, if not all of us—for the intrusion of the strange and profane is not unknown even in the most learned of societies—know where it is, down in the very south of the United States, and looking, on the map of North America, for all the world like a tentacle or feeler stretched out toward the sunny tropics and that great curved bow of palm-fringed islands we call the West Indies. These, with Florida, are the eastern edges of that cauldron-sea, the Gulf of Mexico, and between them for ever flows into the wide Atlantic—northward, southward, eastward—the Gulf Stream. Thus we have Florida, a peninsula some 500 miles in length, flanked on the one side by the Atlantic Ocean—here overlaid by the warm waters of the

Gulf Stream—and on the other by the equally warm waters of the Gulf itself, thrusting its southern extremity into the balmy seas of the tropics, while in the north it is riveted to the great mass of land that extends in almost unbroken continuity to the lone North Pole itself. It is not surprising, therefore, that the climate of Florida should be, if not insular, at least peninsular. It is not to be wondered at that across its pine-clad plains fresh ocean breezes should daily sweep, that the air is as mild and moist as that we feel against our faces when sailing on summer seas, and that there we find the combination of great moisture and great heat which is the characteristic feature of a tropical climate. There is the heat, with its attendant ills—notably, gnats and mosquitoes; there is the moisture, with the inevitable risk of malaria; and there are the balmy air and aqueous breeze which ripen our crops while they refresh ourselves. And it should not cause surprise if occasionally in winter time a flying visit is received from Jack Frost, for Florida is part and parcel of that continent whose central and northern regions are held in the bitter grasp of winter for many months in the year, and are the habitat, the birthplace, of the blizzard.

I cannot enter now upon the building of Florida, or describe how, by geologic processes, the arch-architect Nature has reared on a basis of coral a land of such fertility. I cannot speak of the forces of erosion or upheaval, nor discuss the question of how far Northern Florida is due to the *detritus* of the Apallachian chain, and whether that vast lake, Okeechobee, in Southern Florida, be really the last remnant of the atoll of which the long stretch of coralline rocks on the Atlantic coast is the eastern rim. Neither can I dwell on the historical aspects of the subject, and enter upon the debatable land of controversy. I have no time—even if I had the power—to settle the question whether Florida was discovered by Juan Ponce de Leon, the Spaniard, or by our own countryman Sebastian Cabot, who was born at the ancient and once most important port of Bristol, of a Venetian father, a pilot by profession. I need not dwell on the many political changes which have passed over Florida, or follow the fortunes of the aboriginal Seminoles, and the intruding Spanish, French, English, and finally Americans. It will be enough if I am able to give you a brief description of the country as it appears at the present day, and draw your attention to the characteristic features you would encounter in a journey through the State.

On arriving in Florida the first feeling—especially if we have read much about the beauty and wonders of the "Land of Flowers"—will be one of disappointment. The stranger enters at the northern extremity of the state, and the palm trees and magnolias, the gardenias and wild roses, which have caught his fancy and fired his imagination, are not to be found there.

They grow in profusion in the south, and are met with in large quantities in the centre of the State, but in the north nothing will be encountered but miles and miles and miles of pine forests; pine forests with no wealth of undergrowth—with the tall thick stems appearing like masts behind one another for a mile and more at a time; pine forests covering league upon league of flat and grassless plains. For neither is there grass—the short, thick, juicy grass, as we understand it—in this part of Florida—only long, thin, wire grass, and plenty of that. The soil, which the new arrival may have imagined as a rich dark loam, proves to be grey sand or yellow sand almost everywhere. He straightway begins to sympathise with the "walrus and the carpenter," and feels that he, too, could weep like anything to see "such quantities of sand." But he will sooner or later discover that the whole of the Atlantic seaboard states have the same soil. From Sandy Hook, at the mouth of New York harbour, to Cape Sable—which means Cape Sand—at the southern extremity of Florida, there stretches, in unbroken continuity, a land of sand. The fertile and prosperous states of Virginia, North and South Carolina, and Georgia possess the same soil, and it is from this loose sand that the famous cotton and tobacco of these states have come. It is true that this northern belt is not the most luxuriant section of Florida. But we must not suppose that it is *Florida infelix.* Far from it. This is the peculiar region of the "trucking" industry. Hundreds upon hundreds of thriving vegetable and fruit farms are to be met with. Many Englishmen are making handsome incomes out of their strawberries and cabbages, Le Comte pears and Pean-To peaches, tomatoes, and potatoes, in this northern belt. Tobacco is again coming in for that share of patronage which "befo' the war" it monopolised with cotton. The successful culture of the grape vine is giving birth to the manufacture of wine; and although this part is outside what may be strictly called the Orange Belt, prosperous orange groves are encountered more often than might be supposed. Still, it is not the Florida we expect to see and ultimately shall find.

The first day or so in Florida, then, will probably be a time of disenchantment. It is only when Jacksonville, the gateway city of the state, is left behind, and the new arrival is borne by a luxurious steamer up the broad river of St. John, that he begins to realise he has come to the orange-growing country. A few miles south of Jacksonville the face of the country undergoes a change. The land is more undulating, the banks occasionally rise to the dignity of cliffs, and the pine forests draw away from the river and fringe the horizon. In their place hundreds and hundreds of acres of orange and lemon groves, occasionally interrupted by pear and peach orchards, appear. Pretty wooden bungalows, gaily painted in three or four colours, stand in the midst of the groves, and here and there along the banks a jetty projects into the river—the first connecting-link between the producer and the consumer.

If it were winter when he left the north, here the stranger will find all is summer. Amid the dark-green foliage of the orange-trees countless golden orbs are shining—the precious harvest of Florida. Fruit-trees will be ablaze with blossoms, and in the more favoured spots strawberries will be flushing with a ruddy ripeness. The sky is perfectly clear, the sun pleasantly warm, and the air of a most delicious inconsistency—soft as milk, and yet with the typical sparkle of champagne. Should he be so fortunate as to reach this region on a perfect winter day, the new arrival, whoever he be, will straightway fall in love with the country.

At Mandarin, the *orange belt* may be said to begin. From this point to just south of Tampa—an area extending over two degrees of latitude—the orange-tree is supreme. The country rapidly becomes semi-tropical in appearance. The famous hammocks are no longer few and far between, and their dense growth of red-bay, mahogany, magnolia, and cypress is a more and more familiar feature in the landscape. If one is travelling south by the great waterway of St. John's river, the change is even more marked. The water-oak and cypress—festooned with grey pendants of Spanish moss—grow to the water's edge; upon the bosom of the river there lies an unbroken web of broad-leaved waterlilies; blue and white cranes and turkeys fly before the advancing steamer, and the somnolent alligator on the bank plunges into the discoloured stream. Night and morning dense clouds of miasmic mist envelope the valley, and warn us that the ghostly presence of malaria—the natural heritage of such a land—prevails. The cabbage-palm and palmetto emphasise the character of the region now reached.

This is the Orange Belt *par excellence.* The farther south we go the more marked becomes its character. The chief geographical feature of the belt is the myriad of lakes. From mere ponds to sheets of water of vast extent, they are to be found in ever-increasing frequency as one journeys south. Once fringed by the pine-woods, they are now set in an environment of orange groves, for "a lake-front" is a desirable property in the public estimation, and the settler invariably gravitates towards its acquisition. In this region the great majority of English settlers are to be found—rearing their wooden bungalows on the higher pine-land, and cultivating their twenty or forty acres with more or less industry.

In order to place before you the characteristics of the Orange Belt with greater distinctness, I will divide it into two sections, eastern and western—fluvial and lacustrine; the one predominated by that great artery, the St. John's river, and the lagoon called the Indian river; the other by the hundreds of lakes which, frequent everywhere in Florida, here become positively commonplace.

The eastern section is narrow and much the smaller; the western wide and more important. I have given you some idea of the scene presented in the vicinity of the St. John's river, so I will pass to the next great feature of this eastern section, the Indian river. It is properly not a river but an arm of the sea, the water being salt and tidal. It is fed by the Atlantic through the channel of the Indian inlet, which is over 100 miles south of the head of the river. The coralline belt of land which separates this lagoon from the ocean varies in width from a furlong to five miles. The river itself is never narrower than a mile, nor wider than seven miles. The tide is slight, and the motion of the water is chiefly derived from the almost constant breezes which come from the ocean. The shores are in many parts composed of that curious conglomerate which the Spaniards, who built St. Augustine with it, called *coquina*. The underlying bed of coral, in the process of disintegration, mixed with the contiguous comminuted shells, and cemented together by the action of salt water, formed the concrete. The river supplies oysters and turtle, fish of great variety—at the inlet the manatee himself is caught—and, most important of all, its banks are the home of as fine an orange as can be found anywhere in the world. This is all the more curious as the Indian river orange belt is only about three miles wide. It chiefly lies on the west bank of the river. This belt is confined by the wet prairies—large tracts of saw-grass with perennially standing water—which lie to the westward along the course of the head-waters of St. John's river. Further south, this belt is limited by the swamps and saw-grass area between it and the Kissimmee and Okeechobee lakes. The shores of the Indian river are free from swamp, and rise at an acute angle (for Florida) into what may sometimes be called high bluffs. The homes of the settlers are either on these bluffs or some navigable stream flowing into the river. Every property has its own boat-landing, and the river itself is the highroad of the region. Sailing boats of all kinds of rigs take the place of "buggies" and "buck-boards" in this part of Florida. In fact, we might call the rapidly growing Indian river settlement the Venice of Florida. On the narrow strips of land east of the river the pine-apple is being successfully cultivated, and southward, toward the inlet, the cocoa-nut palm region begins. As the cocoa-nut requires salt water and a coralline or limestone soil, the southern coasts of Florida are admirably adapted for its cultivation. This coast strip is unsuitable for oranges, which appear to shrink from the undiluted ocean gales. The Indian river orange is a noble fruit. There is little in common between it and the product of the Mediterranean. The pulp is so delicate, the skin so tender, and the juice so sweet that I confess I have no hesitation in describing it as a perfect orange. The famous Dumit Grove, at the head of the Indian river, first gave a distinctive character to the orange of this region.

I now turn to the western and larger section of the Orange Belt, which lies westward of St. John's river. This is emphatically the lake region. Around Lakes George, Apopka, Harris, Griffin, Eustis, Weir, Tohopekaliga, and East Tohopekaliga are some of the finest groves in the state. The Harris Grove on Lake Harris is the largest, and the Norris Grove near Spring Garden (south-east of Lake George) the second largest grove in Florida. The latter has, I believe, no fewer than 15,000 trees! The De Barry Grove, on Lake Monroe, is hardly less famous. The high lands of Hernando and Sumter counties form the most healthy district of Florida. Until the recent creation of Lake County, Sumter was without doubt the premier county of the Orange Belt. It has now lost its most important lakes, and the palm will in the future be carried off by Lake County. The whole region shares with the rest of Florida its great diversity of soil; but the out-cropping rocks, the clear and never-failing springs, the innumerable creeks and rivers, the open lakes, the rolling hills, the general elevation of the pine-land—which near Apopka reaches the altitude of some 400 feet—and in Hernando County the rich clay subsoil are the peculiar property of this portion of the Orange Belt. There are, of course, swamps and prairies, for no part of Florida is without them; and you can ride, as I have often ridden, for an hour or more at a time through some cypress swamp, where the enormous trees seem to emphasise the ghostly desolation with their huge whitened trunks and branches—the latter entirely devoid of leaves; where the long grey hairs of the Spanish moss accentuate the oppressive melancholy; and where the water, which washes up to your stirrups as your horse slowly and cautiously forges ahead, is coloured a dismal brown by the tannin of the spongy mass of vegetation. But, at the same time, here are fine rolling pine-lands, a healthful climate, an ever-growing community, and as lovely homes as exist in Florida. Hundreds, aye, thousands of Englishmen are dwelling in this region, either as members of the English colonies, which are all situated on this belt, or as isolated settlers. Many are rapidly advancing to wealth, and many—I have not the slightest doubt in the world—to beggary. Of such importance is the personal equation!

Now and again, when riding through the open forests and over the rolling pine-lands, you come upon a delightful scene of order and prosperity. Standing in the midst of long rows of orange trees, which radiate in all directions from it, you see a rambling bungalow, its woodwork brightly painted, and its windows dark with the shadows cast by a wide verandah. Around are all the outbuildings and appointments found on a well-kept property. You are struck by the orderly character of everything. As you halt at the gate a genial, sunburnt individual comes down the drive, and, calling a negro groom to take your horse, invites you in a hearty fashion to take "pot-luck." The man is an Englishman—you knew it the moment you saw him walk—no Yankee slouch about *him*. "This man," you say to yourself, "is prosperous and happy." But your surprise ceases, if surprise you felt, when he takes you into the house, and you observe the touches of refinement and taste which give to the cane-lounges and swinging hammocks a drawing-room grace, and when he introduces you to his charming wife and a bevy of fair-haired children. Your surprise ceases, I say, for is not an Englishwoman an incomparable being all the world over, and one who only adds lustre to herself when she faces a rougher life in order to share that of her husband? What wonder is it that such families as this should serve as lode-stars to the course of English migration, and attract a group of young settlers who are all the better for that perfect English home within their midst? And, I should like to add, I have not described a rarity, but a feature which is daily becoming more frequent and inevitable as the English community advances in numbers and prosperity.

On arriving at Kissimmee Lake the southern limit of the Orange Belt is reached. I do not mean to say that oranges cease to be cultivated, but that their undisputed supremacy is gone. Much of the land is unsuited for the citrus tree, and vast tracts are found where it could never flourish. We have now come to that part of Florida which I might term the sugar belt. With the increase of tropical vegetation there is a corresponding increase of low flat moist land. Both sugar and rice are cultivated here with the most satisfactory results. Two crops of rice —as in Japan—might be harvested in a year. Such grass as alfalfa grows with enormous rapidity, and—as in Switzerland—may be cut frequently. Between this locality and Lake Okeechobee is a wide area of coarse pasturage. Here are the great ranches of Florida, the cowboys, and those cow-ponies which are as distinctly Floridian as the mustang is Texan. From Punta Rassa—which is the telegraphic station to Cuba—a great export trade in beef is done with Cuba. The beef is poor enough, but as the cattle are allowed to run wild through swamps and prairies and salt marshes, and are only "rounded up" once a year for immediate export, it is not surprising.

South of this region are the Everglades, an unexplored and uninhabited territory. All we know of it is that it consists chiefly of swamp, saw-grass marshes, and many small islands of hammock character. Otherwise, it is as much a *terra incognita* as was the basin of the Aruwimi before the last achievement of Stanley in the heart of the Dark Continent. However, the water is not salt, which proves that the surface is above sea-level, and therefore, I suppose, capable of drainage. . The shoreless wastes of Okeechobee are being reclaimed, and the day will probably come when the vast labyrinth of the Everglades—over four million acres in extent—will be attacked by human energy and wrested from the rule of the malaria demon. The wild swamp land, the tangled impenetrable vegetation, the alligator that stirs the muddy water, and the mosquito that pervades the still malarious air, are features which will one and all be modified, if not improved off the face of the earth, when there is a cry for " elbow-room " in Florida.

The Florida Keys are purely tropical. They largely consist of mere islets, given over to the close embrace of the mangrove. Some, however, are covered with several varieties of tropical trees, and the larger are rapidly being utilised as natural forcing-houses for early vegetables and tropical fruit. Key West, for instance, has enormous plantations of cocoa-nut trees, and this is also the case with the extreme southern coasts of the mainland. Some of the keys are entirely devoted to the culture of the pine-apple, and you could do much worse than emigrate to one of these beautiful islands and raise your ten thousand pine-apples to the acre!

The soil of Florida is a veritable patchwork; and I will be very brief on this point. Of coralline origin and raised above the sea-level by various forces, it is not surprising that a sand *superstratum*, containing an admixture of sea-shells, was formed. With the subsequent growth of vegetation there ensued, by the process of decay, a deposit of vegetable mould or *humus*, which now permeates the open sandy soil to a greater or less extent throughout the whole surface. Although we call the soil " sandy," it must be remembered that there is a varying proportion of lime—of coralline and sea-shell formation—and a large proportion of potash among its constituents. Soda, phosphorus, and oxide of iron also combine to make Florida soil. The sand of Florida, in fact, is not the *silica* of a sea-beach, but has a large admixture of humus, loam, and lime. The highlands of the "divides" have been upheaved from waters below the peninsula —it is believed that a vast sea underlies the land—and thus we find rock of tertiary formation in West-Central and North-Western Florida. The kinds of soil differ widely, and you may have in a 40-acre section two or three of the varieties—" a dry porous swell may be bounded at a few feet by wet land nearly impervious to water, or a cypress swale, and the rich soil of a hammock may lie beside a black-jack ridge." Hammock-land is the highest priced, but in the long run not much better than good pine-land for orange growing. Uncleared hammock-land is frequently half a swamp, densely shaded by the hardwood trees which grow in profusion on it, and which annually add to the dank soil below a layer of shed leaves and tendrils. Thus year after year vegetable mould is made, changing the colour of the soil from greyish-white to purplish-black; and, at last, it is by no means unusual to find this vegetable *humus* many feet in thickness. If cleared and drained, such hammock proves of great fertility; and if left in its virgin state, the wet spongy "muck" is largely used as a fertiliser. No European, however, can live on hammock-land, and it is usually injurious to his health to cultivate it. The only other soil to which I shall draw your attention is the dry pine-land—land, that is, on which the long-leaved pines grow tall and thick, and have an undergrowth of willow-leafed oak, and, in moist spots, of hickory and persimmon. This land, unlike hammock, is easily cleared, and indisputably healthful. On such land the English in Florida have made their homes and planted their orange trees. Indeed, it is suitable for any fruit trees. With these two soils it is the case of the hare and the tortoise over again, for although trees planted on hammocks grow rapidly the first few years, in the end they are no larger nor more prolific than those planted on the pine-land.

A few words as to the climate. Although it is with the Orange Belt—which lies between the parallels of 30 degrees and 28 degrees north latitude—which we as Englishmen have chiefly to deal, it must not be forgotten that much that applies to this section will apply to the whole of Florida, and that the seasons are to all intents and purposes identical, save, of course, as regards the humidity of towns situated on the sea-coast or the "keys." A straight line drawn from Jacksonville on the north-east to Tampa on the south-west will traverse the entire region of Central Florida, bisecting the parallelogram which the collective counties may be said to form.

The longest season of Florida is the summer, which lasts at least five months—from April to the end of August. Its chief drawback is its length. Five months of heat are apt to become monotonous to the Englishman who has been accustomed to about five weeks; but beyond this monotony there is no real drawback. Each day begins with an unclouded sky, a hot sun, and a still atmosphere. About 10 a.m. a breeze begins to stir among the pine-trees, which gradually increases until, about 2 p.m., it has brought up heavy banks of thunderclouds, which shortly afterwards break in a noisy tropical downpour of rain. By 5 p.m. all the clouds have passed away, the breeze has dropped, the moisture disappeared in the porous soil, and a beautiful evening, calm and deliciously cool, crowns the day. No division of the day could be better for the unacclimatised. Most of the work is done in the early hours of the morning, and what would otherwise be the hottest part of the day is relieved by the strong fresh breeze which arises as punctually as the hand of the clock points to the hour of ten. From noon to late afternoon the fruit-grower rests within his house, or busies himself about such carpentering and other matters as may demand his attention. When the storm has cleared the air he attends to the stock, and then devotes the rest of the evening to social relaxation, for the labour of the day has come to an end and the night is clear and cool. When the stars hang overhead in an unbroken arch of brilliance, and the pine-trees cast long shadows across your garden ground; when along the low and far-distant horizon "summer lightning" rushes in rapid flashes, illumining the wooded landscape with its beautiful but weird light—then the social instincts of the colonists assert themselves, and at one house or another a dozen or so neighbours assemble, arriving in buggies or on horseback, with all the clatter and jollity of unconventionalism. In a very short time the broad verandah is crowded with easy chairs and little tables; across the shirt-sleeved groups the lamps and candles throw their light without a single flicker—so still is the air—and ray into the growing darkness of the night; and the hearty chorus of song makes the welkin ring as these "jolly dogs" shake off what scant measure of dull care the labour and anxiety of the day may have meted out, and make merry in good old English fashion under that far-distant sky.

In summer the risk of catching malaria and "chills and fevers" is much increased. The hour after sunset is a fatal time. The moment the sun sinks behind the dark plumes of the distant pines the wisest thing an Englishman can do is to retire to his bungalow and eat his dinner. The sudden cooling of the air, consequent on the disappearance of the source of heat, gives birth to the long low clouds of miasma which hang over the lakes and streams and lie upon the ground, thick as an orthodox London fog. The fermenting vegetation and receptive atmosphere is far too kindly to the "bacteria" of malaria to make it safe for man. As to minor diseases, some new arrivals suffer from prickly heat, some from sores, and some from boils; but, when once acclimatised, men seldom suffer from such attacks. Mosquitoes, sand-fleas, horseflies, and gnats are nuisances; but wire-gauze screens to doors and windows and mosquito-nets to the beds are effectual preventives—within doors—to these pests. New comers get their full share of mosquitoes for a time; but when the blood becomes thin they practically cease to annoy. Finally, it must be remembered, that *oppressive* heat is almost unknown in Florida. The "hot-oven" heat which strikes down many a New Yorker with sunstroke and heat-apoplexy is a stranger to the Florida "cracker."

The short wet autumn—which includes the months of September and October, and sometimes November—is decidedly unpleasant. Chills and fevers, ague and malaria, and, chief of all, the Dengue fever, are rife. This Dengue fever is peculiar to the river regions of the Southern States, and, though not dangerous, is exceedingly disagreeable. It begins with a backache, and then spreads to every bone in the body, the pain being sometimes excruciating. It is popularly—and graphically—called the "break-bone" fever. Some believe it arises from the prevalence of brackish water; others from careless exposure to the chilly night air of the "fall months." However that may be, my advice is, "Don't catch it;" and the best way of following this counsel is to refrain from introducing yourself to Florida during its autumn season.

I have already referred to the charm of Florida winters, but I would point out here that although the winter is usually reckoned from the beginning of November to the end of March, November is frequently a very wet month, and March a hot one for winter. The three middle months require no apology: they are as perfect as we can get things, I suppose, on earth. There are "cold snaps" occasionally, and sometimes more rain than one expects, but on the whole the winter is charming. It is the salvation of Florida that winter is a very dry season, and that she does not have, as California, wet and cold together. The weather closely resembles the "Indian summer" of the middle states, and there is a dryness and elasticity about the atmosphere that makes for physical enjoyment. That the Floridian winter is something out of the common may be gathered from the fact that from 70,000 to 80,000 Northerners annually come south for the sole purpose of wintering in the state. With the lukewarm waters of the Gulf of Mexico on the west and the tepid Atlantic and Gulf Stream (77 deg. Fahr. mean, with only 7 deg. range, winter and summer) on the east, it is not surprising that the sea-breezes which daily blow across this pine and palm covered peninsula should bring with them a warm and genial climate, when the whole of the northern and many of the central states of the Union are in the icy grip of a four months' frost.

Herein lies the secret of the Florida climate. It is, I repeat, if not insular, at least peninsular. The influence of the sea moderates and equalises the temperature. An annual average temperature of 75 deg. is highly productive, *cæteris paribus*, of vegetable growth, and the isotherm of 75 deg. runs right through Central Florida. About 70 deg. of humidity is considered to be the most advantageous for producing periodic rainfall and generating atmospheric electricity, and Central Florida exactly complies with this requirement. Again, on the grounds of health, high atmospheric pressure is to be infinitely preferred to low pressure; and as on the parallel of 28 deg. at sea-level—

where the greatest atmospheric pressure is found—and with temperature at freezing point, the barometric pressure is 30·5 deg., it is obvious that the Florida average of 30·035 deg. is exceedingly good. The watershed of Florida is low, and consequently offers no obstruction to the free passage of sea-breezes; and as these winds come daily from the warm waters on either side, bringing a large amount of humidity with them, the dew point is reached by a slight depression of temperature. Further depression is thus arrested, and the temperature of day and night thereby equalised. Heavy refreshing dew and rain are the inevitable result. And further, as water absorbs heat more slowly than land, and therefore remains in hot weather comparatively cooler, the summer temperature of a sea-girt country is comparatively low. Similarly, as water parts with its heat by radiation more slowly than land, and therefore remains in cold weather comparatively warmer, the winter of a maritime country is moderated. In other words, the climate of Florida, though semi-tropical, is essentially temperate.

So many Englishmen have settled, and so many are intent on settling in Florida, that some account of the conditions under which our fellow-countrymen have already found homes and livelihood in this state cannot but be interesting. By placing before those who are still in the Old Country a description of the luck—and, I may add, the ill-luck—of their compatriots in the New, and by pointing out the more obvious causes that have determined their success or failure, I may be helping many of those who are about to migrate to the "Land of Flowers" to avoid, on the one hand, the fate of their less fortunate brethren, and to attain, on the other, a success similar to that which has been gained by the more fortunate. I may, moreover, be interesting those who have relatives and friends settled in this state.

First, then, as to the character of the average English settler. As a class, it is decidedly more fitted than not to succeed in the life it has elected to lead. The English settler is nearly always a man of superior breeding and education, and often one who is more adept at handling a gun or backing a horse than driving a quill. He is frequently a younger son of what some would call "the classes"—an army failure, perhaps, but a good fellow and with plenty of grit in him, all the same. He has often been educated at some public school, where, by strict attention to the business of athletics—and that business alone—he has made himself unfit to succeed in this country where competitive examinations are the "*open sesame*" to most of the higher walks of life. But often he has proceeded to a higher plane of education, and augmented his school training by whatever a career at the Universities can give. At any rate, whatever his antecedents, we find him in Florida a fine healthy young fellow, with all the sturdy traditions of English virility and pluck strong within him, and in every sense of the word physically fit to push on and get on. He has, however, one drawback, and that is his lack of the power to *endure.* This inability to endure—to wait in patience while steady and continuous labour works to a successful end, to bear the burden and heat of the summer in order that the harvest may be reaped, is a distinguishing feature in the cases of failure in Florida. Many a mere lad—as the annals of English heroism amply prove—can go through perils by water and perils by land and come through with colours flying, but the ardent and restless spirits of youth seem particularly prone to succumb in face of the constant difficulty, and the long months and years which must intervene before success can ordinarily be gained in the more popular and staple industries of the state. Just as the day-to-day labouring life of the industrial classes of England fits them particularly for successful toil in many of our colonies, so the previously easy and in many cases idle existence of the younger members of the more leisured classes unfits them for succeeding in a sphere where the daily round and the trivial task are more potent in assuring success than any temporary spasm of energy, however herculean, can possibly be.

On the other hand, it may be said that the particular industry of Florida to which most Englishmen turn their attention—that of orange and fruit growing—is one in which the demands on personal labour are comparatively light—certainly, very light in proportion to the possible returns. The culture of fruit does not require the amount of labour which is necessary for the culture of grain. The fruit-grower is in every way a less-worked man than the farmer. The very nature of his work is different. While the farmer has to drive his heavy two or three horsed plough through a more or less heavy soil, the fruit-grower simply tickles, as it were, the sandy surface with a light machine, drawn by a pony or mule, and easily guided with one hand if necessary. Whereas the ground has to be deeply furrowed for the reception of seed, the surface soil of the orange grove has only to be lightly stirred in order to admit air and moisture to the lower stratum. Indeed, the roots of the trees of the citrus family, which spread out horizontally and seldom sink six inches below the surface, would be injured, if not severed, were the plough to penetrate any distance. Harrowing, again, is almost a child's task. The harrows required for fruit-growing are mere toys in size, though efficacious enough in effect. When harvest arrives the labour again is light, although the hours may be rather long—if, that is, the fruit-grower be fortunate enough to have a heavy crop. With specially made clippers he plucks the golden fruit from the branches and places it in an open receptacle at his feet. The fruit is then "sized," packed in boxes, and despatched to the distant markets of the frost-bound north. The same may be said of the harvesting of pear and peach crops, and of all the variety of fruit which it seems Florida's special mission to provide.

When the fruit-grower adds to his grove some acres of vegetables and the lesser fruits—such as potatoes and cabbages, strawberries and pine-apples—the work of sowing or planting, cultivating and harvesting, is less agreeable though hardly more laborious. In no case has the cultivator to undergo the toil of the farmer—his work rather resembles that of the gardener. However much there may be of it—and this entirely depends on the acreage and crop under cultivation—there is not likely to be *any* work on a grove or vegetable plantation, when once the clearing of the virgin land is complete, that cannot be easily and thoroughly done by the sturdy young Englishmen who emigrate in such large numbers to the state.

There is, however, another class of settlers which compels our attention. There are many men of mature age in Florida, who have had farming experience in England or who have been forcibly retired from our army or navy in the prime of life and the ripeness of experience, or who have worked and prospered, more or less, in various callings, and who have, in the full vigour of manhood, turned their steps to Florida in order to live a less conventional and, perhaps, easier life with a surer prospect of ultimate success. These men, it need hardly be remarked, are valuable additions to the community. They come with a ripe experience of life, with a keen realisation of the necessity to work, with a toughened temperament and a balanced judgment, and, with what is so important to a youthful country, a fair amount of capital. These men, if they once settle on the land, seldom fail. They very soon make it apparent that they have "come to stay." Such bugbears as mosquitoes or snakes, long summers or occasional frosts, which frighten away many of the younger men, are accepted at once by the matured and more experienced. They know that in every country, and especially every new country, the drawbacks are many, and as often as not take the form of personal inconveniences. They also know that their ability to "try something else" is in inverse proportion to their age, and that the dancing will-o'-the-wisp of fortune, which allures so many of the youngsters away, has flashed too often before their eyes to attract attention now. I repeat that this class of settler is a boon to any community. It is a class which is at once the ballast and the mainstay of society, and the strongest hope of the New World to redress the balance of the Old.

I have thus far defined two classes of English settlers in Florida, and I may say at once that they embrace the great majority of our countrymen in that state. There may be other varieties, but there is no other CLASS of men. In small numbers, and scattered haphazard over the state, there may be found some English gardeners and artisans; ex-clerks of lower grade—too often without capital and without strength or the necessary habits of life; some sturdy sons of small tradesmen, who not infrequently do better by setting up "stores" than by cultivating land; and a heterogeneous group of failures—and possibly "outsiders"—from our country and our colonies. But the Englishmen in Florida who are fruit-growers by choice, and, if I may say so, by "natural selection," are almost to a man members of the two classes I have already described at some length. There is nothing, really, to prevent the others from succeeding, but it is a fact—and curious, perhaps, to those who study the laws of modern migration—that the conditions of life and labour in Florida have attracted the very best we can afford to spare.

It can be readily understood, therefore, that society in Florida is good. I have lived and travelled in many lands, and, with the exception, perhaps, of India—which is always an exceptional country—I have never met with such good English society as in Florida. In Canada and Australia, in New Zealand and at the Cape, you may and probably will have for your English neighbour an ex-small farmer, an ex-labourer, or an artisan. They are very good in their way, of course, and with their grand powers of endurance form excellent colonists. But it is not desirable for a man of superior breeding, and it is impossible for a gentlewoman, to associate on intimate terms, year after year, with the uneducated and unrefined. They and their families may be entirely estimable, but in no way are they desirable *habitués* of your hearth. Now, in Florida, all is different. One suffers no social ostracism in migrating thither. The English society there is the same as you have had at home. You are surrounded by bachelors or married men, in every respect your equals, who form an agreeable and sympathetic society. Those who are married have English ladies presiding over their homes, and this fact alone preserves the amenities of social custom among many men who might otherwise roughen into the vigorous but rude simplicity of the pioneer. None but those who have witnessed it can realise the amount of brightness and life, social progress, and stability that a lady brings into a colony of young men. The more wholesome of drawing-room graces revive in a moment, and the bronzed and bearded settlers add in the evening, as a corollary to their work, the refining indulgence of music—and morals!

So much for the English settler *per se*. I now come to the question, Under what conditions do we find Englishmen settling in Florida? I reply, broadly, under two—as part and parcel of a "colony," and as isolated settlers. There has been a good deal of talk about these colonies in Florida, and it will be desirable to give some account of them which will be at once reliable and disinterested. This latter attribute is worth something, for both Florida and the English have suffered much from the glaring pictures an interested and unscrupulous imagination has drawn. I allude to the imagination of Florida landowners and agents, and that of their romancing representatives in England. A few of the latter—you can count them on the fingers of one hand—are as reliable as men can be who have never set foot in the country and become acquainted with the conditions of life and labour in it; but more, it is to be feared, combine with their crass ignorance the ready recklessness of the rogue. In Florida itself land-sharks are plentiful enough, but one has always the protection of being able to see for oneself. Here it is different, and, owing to a too-confiding nature, many a young fellow has been allured by an unscrupulous schemer to a course that could not but end in disaster. The catastrophe—for it was nothing else—which befell a whole colony of Scotch at Sarasota is an instance in point. Had they listened with a cautious ear and accepted with considerable reserve the delightful romance spun to them; had they sent out thoroughly trustworthy representatives to survey the land and report on the prospects generally, it would have been averted, and a more desirable section chosen. But, committing themselves to the "cruel mercies" of the interested, they launched their barque on the sea of infatuation, and, naturally, sank. There are some words of advice which I would repeat while I am on this subject, and which have been worth thousands of dollars to those who have taken them: Do not buy a single acre of land until you have *seen it and walked over it.* And, I might add, Do not buy *at all* until you have been long enough in the state to judge for yourself.

I would here give a word of caution as to buying Florida property in England. All Florida lands are surveyed regardless of rivers, lakes, and swamps, and you cannot tell when you are buying a 40-acre section—and the agent who is selling it to you may not know himself—whether you are buying a solid tract of cultivable soil, or whether the half or even the whole of it be one of the much talked-of lakes. Now, in a warm climate a lake is undeniably a pleasing prospect, but it is not usually considered a suitable soil for the orange tree or a satisfactory foundation for a house! There are countless stories told in Florida of the various ways in which a would-be purchaser has fallen into the clutches of that voracious, though not veracious, monster, the land-shark, *alias* the land-agent. I will recall one for your benefit. A certain man went forth to buy, and, behold, he fell among thieves—that is to say, he was driven out of town one day by a well-dressed man in a well-appointed buggy to view a "desirable property." After marching round the estate, keeping step to the well-balanced eulogies of the well-dressed man, he was at last halted by that individual on the edge of a well. Now the word "well" in Florida admits of a twofold comparison: you may go up the scale with "better, best," or down it with "worse, worst!" The latter mode of progression is most in fashion. So, when the land-agent called to his negro groom to lower a bucket and draw up some of the element to prove it was a refreshing fountain of health, the possible purchaser was enchanted to find a pure drink of the most entrancing coldness. Clearly this ice-cold spring was worth—as, indeed, he had been assured—the money asked for the whole estate. So he bought; and when on subsequent occasions that water seemed as hot as the air above ground he felt mystified, but when he discovered that while he was "beating the bounds" of the property the negro groom had slipped a 20lb. block of ice (brought for the purpose) into the well, his feelings and his language became such that I despair of getting the Lord Chamberlain's licence to permit me to describe them!

The English colonies in Florida have not done as well as might be expected for two reasons. The first is, that as a rule they have been started too far from a centre of population to enable the members, while their fruit-trees are maturing, to support themselves by growing the small commodities which are always on demand in large towns. They have thus been starved out. The second reason is, that most of the members of these colonies are quite young, with no settled habits of work, and without sufficient stamina to persevere. Everything has made for sport and recreation, as against steady labour. The presence of that very co-operative medium which might have helped to success has tended toward another and very different end. With regard to the inappropriate location of these colonies, there is, of course, something to be said for the founder. It is necessary for success that he either own or control a large amount of land, and land cannot be bought cheap enough for his purpose near a town or a railway station. He calculates that by the time the colony has grown up both town and station will have come to him. In a country like the United States, where towns with a full complement of municipal corporations, town-halls, railway-stations, and a complete system of local corruption spring up in a year, this is a natural calculation for him to make, and the only thing to be said against it is that unfortunately it may prove to be inaccurate. The town and railroad take another line of country, and the young colony, just at the time it requires most sustenance from without, receives none. The fruit-trees are still in the unprofitable non-bearing stage, and the distance from the vegetable market discourages production for it. Too late, the colony awakens to find that it is dying of starvation. The weaker members fail, the stronger migrate, and the residuum, giving up all hope of making a future or of even earning a living, alleviate the short lease of life that is left to them with such diversions as sport can afford.

I have known more than one colony like this. I lived for a time in a colony which, socially, was perfectly charming. It had more than fifty members, and pleasanter, jollier fellows it has not been my fortune to meet. Many were men of superior education; several were University men, barristers and the like; all were gentlemen. The elements of an agreeable society were present—there were even ladies to cap the social edifice—but the *desideratum* of a successful colony was conspicuous by its absence. There was not one member of that colony who was supporting himself by his land. There was not even one grove in the colony which was self-supporting. Many of the members had embarked considerable capital, over which they had control; but more belonged to that ubiquitous but unsatisfactory class of "remittance-men," who, depending for the sinews of war on regular or irregular contributions from home, were by that very fact made thriftless, shiftless, and dependent. Venturing nothing, they nothing had. Having set out their orange and lemon trees and planted a few bananas, they "let Nature have her perfect work" with regard to the rest, ignoring or not knowing the stern fact that in a sub-tropical country Nature must be sharply looked after if she is to prove a helpful handmaiden.

This colony—and there are several in the same plight—suffered from want of stimulus. Had it been smaller in extent or nearer to a town or first-rate shipping point, there would have been the prospect of earning a good living by vegetable growing or "trucking," as it is called, and by poultry and dairy farming on a small scale. Vegetables grow prolifically in Florida, and in winter the stampede of Northerners to the state is so great that the demand is always well ahead of the supply, and prices, as a consequence, are very remunerative. It may be regarded as an axiom in Florida, that an acre well tilled within a mile of a market is worth twenty indifferently cultivated ten miles away. This distance, then, from large centres or suitable markets, is, I consider, a very powerful reason against the success of some of the chief existing colonies. And, in the same way, the want of opportunity to co-operate in industry impels the colonists to combine in sport. A large shooting party is a diversion hugely appreciated by the younger members, and however frequently such a diversion occurs it never fails to gain popular support. And in the cool of the evening convivial parties ride and drive from bungalow to bungalow, encompassing the colony till the company embraces its full strength and the entertainment assumes a boisterous plenitude. There is no objection to this, of course, but the undue prevalence of sport and the facilities for indulging in it in these colonies is a prime factor in many cases of failure.

There are, however, several points on which a colony holds out an inducement to the English settler. First of all, there is good company, and if a man really means business and hard work he will not find it difficult to meet with some kindred spirits. Next, there is the probable advantage of a club soliciting his patronage, where he may not only read most of the home newspapers and periodicals, but even indulge in billiards and other lawful delights which serve to link him with civilised life. Then there is for his use that most precious investment of others —their experience. The seniors of the colony will be a boon to him, either for what they can tell him or for what they can show him, *or for exemplifying what he should avoid.* There is, again, the considerable advantage of living among your own people—though under another sky, still among home-folk. You can occasionally wave the Union Jack and air your Jingoism without unduly ruffling the feathers of that mightily susceptible bird—the American Eagle. There is the ability to co-operate in work for mutual profit and security, and, indeed, a dozen and more good reasons why a colony might be a very good place indeed in which to settle. Of course it must be understood that the colony selected should lie near a market, and that the individual should make up his mind to work. With these conditions, however, success may be reaped in another manner, and this brings me to the isolated settler—that is, the non-gregarious, as far as "colonies" are concerned.

The Englishman who goes "on his own hook" entirely, and will have none of such things as colonies, can always do well by settling near a good market on a small but fertile tract of land. He will plant out a small orange and lemon grove, of course, to slowly mature, and in the meanwhile he will turn his attention to "trucking," than which few things pay better. If he is in Central and North Central Florida he will have a pear and peach grove besides. Pears pay some people just as well as oranges, though there may be more work attached to them. In the production of what he knows by experience to be the demand of his market, and in the position he enjoys of being able to convey without cost or injury his produce thither, he is a man very satisfactorily placed. Near a centre and enjoying such immunity from inconvenience as it can provide, he is enabled to gauge with tolerable certainty the appetite it is his business to satisfy, and to indulge in such risks and speculations as of his own direct knowledge he is convinced will pay. In nine cases out of ten the settler near the towns becomes what we should call a market gardener. As such, his lot is to be envied, for his outlay is small, his risk slight, his losses but temporary, and his profits large. I know men who, settling in the vicinity of such places, are making their "pile" with satisfactory speed, and who are watching acres of orange and lemon trees slowly maturing into what will be in due course a comfortable fortune. I therefore think it better that the average Englishman, if he can trust his own common sense and rely on his own judgment, should eschew the colonies and stand on his own merits. He must not expect the market to come to him, but solve the problem as Mahomet did that of the mountain—by going to it! On the other hand, if he be inexperienced, fearful of independence and mistrustful of his own strength, let him seek out a colony situated in a favourable district and join it for the help it can give him. Undoubtedly it may temper the wind to the shorn lamb, but there is no reason whatever for undergoing any shearing or plucking process at all!

As I am somewhat carefully estimating the position of our countrymen in Florida, it may be of interest to some if I refer to what is called "the pupil system," and give a brief account of the lot our younger brothers or our sons meet with in Florida. While granting its desirability, I would, however, limit the "pupilage" to a year. In that time the lad will have worked through the complete cycle of the seasons, and have picked up a large amount of general information which should eventually be the means of saving him many a dollar. It is a mistake to extend the pupilage over too long a period; it is equally a mistake to cut it so short as to be practically useless. The sum charged by the fruit-grower for boarding and training his pupil varies from £60 to £100 per annum. I think myself—and I have particularly noted the pupil system—that £5 a month would be ample repayment for the expense and trouble that the fruit-grower is usually put to. It must be remembered that if the pupil is reasonably strong, willing to do his best, and possessed of common sense, he is as good as—aye, and a great deal better than—any ordinary labourer that could be hired. Labour all over the United States is very expensive and, in Florida particularly, unsatisfactory as well. The negroes are lazy and utterly unreliable. They require as much looking after as an infant. At the very moment when you particularly need his services—to get your crops in, perhaps, or to do something which he knows to be important and requiring immediate attention—the man to whom, perhaps, you have been kindest, will come to you in a nonchalant way and say, "I reckon I won't work to-day, Boss," and nothing on earth will make him alter his mind. It is his way of showing you that he is a person of importance and indispensable to you. Now, many English settlers have been able to dispense with this individual by resorting to the pupil system. The pupil, therefore, is an important factor, and gives as much as, if not more than, he gets. The negro's hire would run from a dollar to a dollar and a half a day, and the fruit-grower would be saved that sum and have, to boot, a young and pleasant companion. For, as a rule, the English lads who go in such large numbers to Florida are fine young fellows—strong, active, cheery, gentlemanly. They are, on the whole, capital stuff to make excellent fruit-growers and useful members of the community. There are, of course, exceptions—sometimes glaring exceptions—and £100 per annum would be dirt cheap for these!

But why do parents withdraw their sons from some school, where they have scraped a painful acquaintance with various matters they will hasten to forget when they leave, and which they will find of little or no use to them in their new life, and *then* send them straight off, by parcel post as it were, to Florida? Surely the wiser, the kinder course is to give the lad *some* preparation for the work he will have to do. Take cooking. Hundreds of young fellows are "batching," as it is called, in the pinewoods of Florida—that is, living together in couples or trios, and taking turns to do the cooking. The result, for a long time at least, is such that I would fain draw a veil—or a dish-cloth—over it! The concoctions which I have eaten—and, I am bound to add that, under the influence of a hearty appetite, eaten with *gusto*—concoctions, *messes*, prepared with infinite anxiety and an enormous expenditure of time, would, I am convinced, send the fond parents of the amateur cooks into fits could they only realise the case—or the cooking! Now, a course of improperly cooked food is not conducive to health, and if only from that point of view it is desirable that simple cooking be learnt—learnt AT HOME. There is no need to pay a hundred guineas a year at an Agricultural College to acquire this accomplishment, believe me. Under the head of simple cookery, I would include the baking and boiling of meats and fish, and the various ways of serving up "remainders," by hashes, minces, stews, "resurrection pies," and the like—the making of simple meat and vegetable soups in particular. Such pastry as meat and fruit pies require would suffice. The stewing of fruit and making it into jam would be very useful. And, perhaps, most important of all, the baking of bread. The bread of the usual "gentleman baker" is heavy and unwholesome in the extreme. Its specific gravity must be something enormous. The baking of light bread is, I am led to think, not an easy art to acquire; but the would-be denizen of the pine-forests of Florida will find his enjoyment of meals vastly augmented by the presence of good light bread. Surely it is not asking too much to demand a brief home training in the needful art of cookery for the youth who is taking flight to Florida.

After cookery comes a slight knowledge of the manipulation of needle and thread—the sewing on of buttons, which is a simple art (let me assure any young men who may be present that does not of necessity imply the shedding of human blood or the taking the name of Jove in vain); the making a button-hole, and the arts of patching and darning. Darning is a very useful accomplishment anywhere, and worth a heap of money in the pine-woods. Again, simple carpentry is always being required. Your house, your rails, your waggon, your gates are all constantly shouting for "simple carpentry." I fear they too often shout in vain! In a word, it is only kind to prepare a young fellow for the new life he is going to in Florida. It is only economy, for it saves boundless waste; only sensible, for it prevents the folly which arises from ignorance; only wise, for it contributes to success; only parental, for it protects the child; *only English*, for "England expects every man to do his duty."

Finally, Is it worth the while of any of us to go to Florida? to follow the hundreds, the thousands of our countrymen who have already gone? My answer is in the affirmative—but with a caution. We can follow them with profit to ourselves; but it is not needful to step in their tracks. Orange and lemon growing may be suitable for many; it cannot be suitable for all. Fruit and vegetable culture demand much stability of character from the would-be cultivator. There is always this personal equation—too often, I fear, is it ignored. A man may play many parts in Florida and success may attend each. The country is ready for further development; its undoubted riches await the enterprise of intelligent men. The tannery, the chemical factory, the sawmill and the sugar-mill, and a dozen and more undertakings will richly repay their owners. The first stage of development—that of tickling the surface of the soil and reaping the first-fruits of a virgin land—is rapidly drawing to a close. The second stage—that of the application of science to the environment of nature—has already begun. Brawny hands and muscular arms have brought Florida up to date; in the future, brains will have their share. Of a certain intelligence Florida has had galore: sharpers and schemers have waxed and multiplied exceedingly upon her. She now needs the science which is the helpmeet of commerce: the intelligence which is productive in the best sense—productive of good to the community. And she deserves it, for despite her whims, her hereditary taint, her occasional unresponsiveness, she holds in her hands the horn of plenty and the clue to a happy life. Therefore I say, "Floreat Florida!"

Note to Map.—Since the publication of this map, five new counties have been formed: Citrus County, formed from the northern part of Hernando County; Pasco County, from the southern part of Hernando County; Osceola County, from the south of Orange and west of Brevard Counties; Lake County, from the north of Orange and east of Sumter Counties; Desoto County, from Eastern Manatee; and Lee County from Northern Monroe. Of these Lake County is by far the most important as regards orange culture.

ON THE TEACHING OF ELEMENTARY COMMERCIAL GEOGRAPHY IN PRIMARY AND SECONDARY SCHOOLS, AND IN A MINOR DEGREE OF ELEMENTARY TECHNICAL INSTRUCTION.*

By Mr. J. H. SILBERBACH, of Liverpool.

[Addressed to the members of the Society, in the Memorial Hall, Albert Square, on Wednesday, June 5, 1889.]

INTRODUCTION.

VERY little is known to the dwellers in our seaport towns, and still less by those who live inland, of the various articles of produce which are daily landed on our shores; and even though their names may be known, the objects, unless very common indeed, are not.

With a view to making these objects better known, and to cause the teachers and children of our elementary schools to take an interest in them, and not only in them but in the countries from whence they come, it occurred to me that if they could be arranged in cases, geographically, a great impetus might be given to the study of Geography.

The cases which you have before you are the outcome of that idea, and you will notice that the specimens are grouped, as far as possible, under various heads—as, for instance, Food Products, Oil Producers, Gums and Resins, Medicines, Dyes and Colours, Earth Products, and so forth.

The cheap and useful maps which are now issued by most of our leading publishers are a marked improvement on those of bygone years; and yet, with all the advantages gained through their use, children know very little of practical commercial Geography.

These cases will, it is to be hoped, meet a need, and cause more interest to be taken, not only by children, but by teachers also, in the study of Geography. The idea of impressing on the minds of both teachers and children the names and uses of imported objects in this way is really a development of the Kindergarten system, and, like that system, uses the eye as an aid to the memory.

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* Prior to the delivery of the address, a number of cases were shown representing various countries, each case containing specimens of the leading products. Cases were also shown of various raw materials, specimens in the intermediate stages of manufacture, and also in the finished state. The set was part of a large collection which is being formed and is intended for use in elementary schools connected with the Wirral Church Managers' Association, and arranged by Mr. Silberbach, who is one of the honorary managers of the Wirral Diocesan Schools.

With a view of making the cases of utility to the teachers, it is my intention to issue with each case a handbook, giving a short account of the country it represents, and its climate, together with a list of objects grown and their uses. The teachers will then give such information to the children as they may think best—not overtaxing them—for it must be clearly understood that the idea is to ease the teachers' work, and not to make it heavier. The tests which the geographical cases in their incomplete state have undergone have been eminently satisfactory, and both teachers and children have benefitted. The monotonous repetition, which left the child at the end of the lesson very little better for the instruction, has given way to a lively interest in the objects and their uses, and inquiries made some time afterwards prove that lasting impressions had been made on the minds of the children.

The teachers' work has also been lightened, because the interest of the children has been aroused and sustained, and what before was simply a lesson becomes a pleasure instead of a toil.

The plan of instruction adopted has been to group the children, say fifteen or twenty, around the case. The objects are then passed round one by one, so that each child can see or feel for himself; and whilst the specimens are being exhibited the teacher explains, in a simple way, their nature and uses. A map of the country is attached to the box, but in schools which have the advantage of large maps of each country it will be better to use them.

I found it difficult to show fruit, and decided that wax models would represent some kinds, but the larger varieties I was obliged to leave out as the models were too large and pictures too expensive.

In the arrangement of these cases my difficulty has been to keep the number of specimens within bounds, for as the work progressed, one improvement after another suggested itself, so that the fear naturally arose as to whether the cases would be large enough, and it is not desirable to increase the size materially unless they are to be kept in one place.

For instance, to show specimens of timber of such size as to give a proper idea of the grain would be simply impossible, and as the import of timber is a very important branch of our commerce, I decided that it would be better to show small pieces such as you have seen rather than leave them out.

Another question that arose was that of metals; and with a view to making this part of the work more interesting I decided not only to show a specimen of the metal, but also of the ore from which it is taken, and thus a short step is taken in the direction of geology.

A further step will be taken when the imitation jewels are obtained and classified, which I am trying to obtain; and as the handbook tells the rock from whence they come, a further interesting lesson in simple geology will be given.

The following cases are either partially or altogether completed: Austria, Australia, Argentine Confederation, Australasia, British Guiana, British Columbia, Mexico, Belgium, Holland, Switzerland, North Africa (including Egypt), West Coast of Africa, South Africa (including Cape of Good Hope and Madagascar), China, Chili, Canada, Central America, Ceylon, Denmark and Iceland, Norway and Sweden, Turkey in Europe, Turkey in Asia and Arabia, France, Spain and Portugal, Germany, Russia in Europe, Russia in Asia, Italy, India and Ceylon, Japan, Peru, Malaysia, Melanesia, West Indies, United States, Mediterranean Islands, New Zealand, Indo-China.

In many cases, where the countries are small, or where the products are very similar, as, for instance, Spain and Portugal, Holland and Belgium, the products of two countries have been placed in one box; and a very interesting lesson can also be given by grouping the cases together of countries lying in the same zone.

When the cases were first arranged, I published a small handbook, which was really a catalogue of the collection then exhibited, intending it to be a guide to teachers when showing the specimens, but as it was arranged hurriedly, and is imperfect, I decided to go more thoroughly into the work and arrange a complete handbook, in parts, so that each case would have a book of its own, giving some account of the country it represented, together with a fuller account of the objects shown.

Your secretary suggested that the West Indies would be a subject which would be of interest to you, and I have adopted his suggestion, and will now, with your permission, give some extracts from the handbook intended for that box, and in doing so desire to make it perfectly clear that only such extracts as will interest the children are to be given when the boxes are shown, the handbook being intended in the end for a wider audience, and for use when teachers are instructing pupil-teachers.

THE WEST INDIES.

The term West Indies is applied to the Archipelago which constitutes the eastern boundary of the Gulf of Mexico and the Caribbean Sea. The name was given by Columbus, and was for a while synonymous with America. They are divided into three groups, the Bahamas, the Greater Antilles, and the Lesser Antilles.

The Greater Antilles consist of the Caymans and Jamaica (British), Cuba, Isle of Pines, and Porto Rico (Spanish), and Hayti (Independent).

The Lesser Antilles consist of the Windward or South Caribbee Islands, Barbados, Grenada, St. Lucia, St. Vincent, Trinidad and Tobago (British), and Martinique (French). The Leeward or North Caribbee Islands, consisting of Anguilla, Antigua, Barbuda, Dominica, Montserrat, Nevis, Saba, St. Eustatius and St. Christopher (British), Desirade, Guadeloupe, Marie Galante, St. Martin, and Les Saintes (French).

HISTORY.

Columbus discovered many of these islands, and gave names to them in 1492. Afterwards the Spaniards extended their investigation and took possession. Their fertility was unbounded and gave sustenance to an immense number of natives, estimated by some as high as five to six millions. These natives received the Spaniards with kindness and hospitality, which met with the most cruel ingratitude in return, and eventually they were almost exterminated, and at the instance of Las Casas, negroes were imported to supply their place, and now the original inhabitants are extinct, excepting a few Caribs on St. Vincent and Trinity.

The first English vessels which visited these islands were under Sebastian Cabot; and in 1536 the French followed suit. From this time onwards a desultory warfare was carried on by the English, French, and Dutch against the Spaniards, and these nations effected settlements on many of the islands. From 1629 to 1650 many of these settlers were captured by the Spaniards, some being condemned to work in mines, and others were massacred. Charles the First was unable to check these proceedings, and peaceable colonisation was hindered, but in 1655 Cromwell sent out a fleet, and many of the islands were added to our possessions. The demand for tropical productions, and the suitableness of these islands for their growth, afforded means for the rapid acquirement of wealth. The cupidity of the early settlers caused them to follow the example of the Spaniards and import negroes, by whose blood and sweat the commodities were raised, and their owners enriched, the annals of these islands from 1492 to 1816 present a melancholy history of calamities and crimes. This was especially the case in Jamaica, where the sudden acquisition of wealth by the English planters, tempted them into great excesses. All moral law was set aside, the slaves were treated with the greatest cruelty, and a series of struggles commenced between the oppressed race and their tyrants. The evils of slavery, and the reign of immorality which existed in the island, stirred up in

England a feeling of anger against the planters, which finally resulted in the emancipation of the slaves in 1838. The slaves when freed, refused in most cases to work for their former masters, and as the latter had mostly squandered their money, the estates gradually fell into the hands of mortgagees, and the staple industry of the island—sugar—was paralysed. Afterwards, the introduction of new planters, with capital, caused an increase in the sugar-producing capacity of the island, but it has not attained the same degree of prosperity as before, many plantations remaining idle.

The tendency of late years has been to export sugar to the United States, and the probability is, that with an increased demand in the States, there is room for an increased output from the West Indies; but to compete successfully the very best processes must be adopted.

With regard to Gaudeloupe and Martinique, the chief French islands, these are very prosperous—a result which is largely attained because of the introduction of the most modern processes and the adoption of the central factory system for preparing the sugar.

It is generally admitted that 13s. to 14s. per cwt. will pay those planters who adopt these improved methods of cultivation, and at present prices the production ought to be materially increased.

Cuba has passed through almost the same phases as the British West Indies. Most of the old proprietors have been made bankrupt, the land has fallen heavily in value, and has fallen into new hands, who, by the introduction of the central factory system, have been able to hold their own. The old method was for each cane grower to work up his own sugar and rum, but in the new system the planters send their canes to a central factory to be dealt with. This system was originated by the French beet farmers, and has been extended into the French West Indies, a large factory having been established at Point a Pitre, costing £216,000, and capable of turning out in the first six months of the year 8,000 to 10,000 tons of sugar.

It would be impossible, in the course of this paper, to give details as to the method of working, but the centralisation of the work naturally leads to great economy. I have dealt somewhat at length with this industry, because it is the largest in most of the islands excepting Trinidad, where cocoa is produced in great quantities.

It will take up too much time to speak in detail respecting the geographical position, size, climate, and products of each of the islands.

I will now simply give you some few examples of the style of information which is given in the handbook respecting each of the products in the cases.

PRODUCTS.

The most important is sugar, which forms the staple commodity of the islands.

SUGAR.—Sugar is chiefly produced from a gigantic grass belonging to the genus *Saccharum*, from beet, from maize. Most varieties of sugar-cane have probably sprung from one species called *Saccharum officianarum*, but authorities are not agreed on this point. (1) The Bourbon cane came originally from Malabar, was transported from thence to the island of Bourbon, where it greatly improved, and afterwards was imported into the West Indies. (2) The Otaheite canes are two, the purple-striped and the straw-coloured. These two and the Bourbon are now so mixed together on the West Indian estates that it is a matter of difficulty to distinguish them. With a good soil and season the plants grow to the height of 12 or 14 feet, and 6 inches in circumference, and the yield is about 2½ to 3 tons per acre. The Batavian canes are four in number, but do not produce so much per acre as the Bourbon, and are of slower growth. The East Indian canes are juicy and sweet, and produce a fine-grained sugar. They flower when eight months old, and can be cut down and manufactured when ten months old. These canes are all red, and are equalled in yielding power by the black and yellow Nepaul canes. There are several small-sized canes in India, the most common being the Kajlee and Pooree, but they are much inferior to our colonial kinds. The Chinese is a hard and solid cane, which withstands drought well and produces crops even to the third year, but the Indian canes are renewed annually. The "elephant" cane, of Cochin China, grows to the height of 11 feet, but is only cultivated for eating and chewing, but would probably prove a good sugar-producing cane if transplanted. In five or six years it reaches the height of from 16 to 32 feet, when it is simply allowed to grow as an ornament in the gardens. Eight kinds of cane grow in the Straits Settlements, the foremost being the Salangore, which is one of the finest canes grown, attaining a weight of 25lb., and a height of 13ft., the yield being as much as 80,000lb. to the acre, as against 21,000lb. to 32,000lb. from ordinary canes. The South Pacific Islands are regarded by some as the home of the sugar-cane, and there are many forms which are strictly local. These canes produce more sugar than the bulk of our colonial canes. The sugar-cane thrives best in a moist, warm climate, with intervals of hot weather tempered by sea air, its most luxuriant development being on islands and sea-coasts, especially in the tropics.

BATATA is a root, originally found wild in the Malayan Archipelago, which has become dispersed over the warmer parts of the world, and is used instead of the potato. It is mealy, sweet, and wholesome.

Plantain (*Musa sapientum*) is a delicious fruit yielded by a plant growing 15 or 20 feet high, found in most tropical countries. It closely resembles the banana, the fruit growing, in favourable situations, to a great size, a bunch, containing 160 to 180, weighing 66 to 88lb. It is generally cut unripe, is skinned, then roasted, and served up as bread. It is also used for fattening domestic animals.

Banana (*Musa iparadisiaca*).—This delicious fruit is to the inhabitants of the torrid zone, together with the plantain, of which it is a variety, what corn is to Europeans, or rice to the Chinese and East Indians. The plant grows quickly, and the fruit, when ripe, is exposed to the sun and dried like figs, and then forms a wholesome food. Meal or flour is obtained by cutting the fruit in slices, and afterwards it is dried and pounded. The same extent of ground in Europe under wheat as would furnish subsistence for two persons, would, in Mexico, under the banana, furnish food for fifty. This fruit, of late years, has become very popular in England The leaves, which are two yards long and a foot wide, are used as food for hogs and as napkins and tablecloths. In the Philippines a wild banana (*Musa textilis*) furnishes a textile material made into cloth and cordage known as Manilla rope (Humboldt).

Arrowroot.—A farinaceous substance obtained in America, the West Indies, and Ceylon, from the root of the *Maranata arundinucea*, and in India from the tubers of *Curcuma augustifolia* (Waterson). It is prepared by grating the tubers into a pulp. It is then strained, and passed through successive waters and sieves until purified. The pure farina then subsides from the milk-like fluid, the moisture is evaporated by exposure to the sun and air, and the flour, when dry, is packed in boxes or casks, where it will keep good for years. Being easy of digestion, it is much used for invalids, and for young children. It is mixed with boiling water, or milk, in the form of puddings.

Tapioca (*Manioc*) is a nutritive substance prepared from the roots of the cassava plant, *Jatropha manihot*, which are pressed, dried in chimneys, and powdered into flour. This plant, when eaten whole, is rank poison, its effect being almost as rapid as prussic acid. For shipment it is dried on hot plates, becomes granular, and is used in a similar manner to sago and arrowroot for making puddings.

Rice (*Oryza*).—The common rice (*O. sativa*) is still found wild in Hindustan; and though the produce is small the grain is carefully gathered, and sells dear, being esteemed as a dainty by rich Indians, who boil it in steam. Rice is largely grown in the East Indies, particularly in the south, where it forms the staple food of the natives, but in Northern India, wheat is the principal crop and food. It is also largely grown in China, where it forms the staple food. Rice requires intense heat and much moisture, the fields requiring to be frequently laid under water—hence the great necessity for irrigation works in India, where a dry season means a poor yield and consequent famine. Burmah, Java, Carolina, and South America furnish a large proportion of our supplies as well as India, and a fine kind is sometimes imported from Japan. Rice has been introduced into Carolina, Georgia, the West Indies, Central and South America, and in Europe, into Lombardy, Valencia, and some of the districts bordering on the Mediterranean.

YAM (*Dioscorea*), belongs to an order of plants of which many are poisonous, the West Indian yam being an exception. In the East Indies they grow to a great size, some tubers weighing as much as 30lb.

TAMARINDS.—This fruit is the product of the East and West Indian tamarind trees, the former being the largest. In the East the pulp is dried, either artificially or in the sun, and mixed with a little salt. The West Indian is put into jars in layers, with sugar between, or boiled syrup poured over. In warm countries they are used in making refreshing drinks, and the black tamarinds in the preparation of tobacco. The pulp is a cooling laxative medicine, much valued in fever.

POMEGRANATES are the product of a low tree, the *Punica granatum*, common in the warmer parts of the temperate zone. The fruit is about the size of the orange, the rind a light brown, and the inside full of seeds covered with a sweet juicy pulp. This fruit is chiefly imported from the West Indies, the southern parts of Europe, Syria, and North Africa. It is much esteemed in hot countries, and of late years a large quantity has been imported into Great Britain.

ORANGE (*Citras aurantium*).—This tree or shrub was imported by the Portuguese into Europe from India and China in the fourteenth century. The sweet oranges, so abundant in our market, are chiefly imported from Spain and the Azores, but the demand is so great that large quantities are also imported from Portugal, Italy, Jaffa, Brazil, the West Indies, and a blood-red kind from Malta. The peel is used in confectionery, a light wine being also made from it, and from the flowers a perfume called "Neroly" is obtained, which is used in making Eau de Cologne (Rimmel). From the leaves an essential oil is obtained, called "Petit-grain," and from the rind an essence called "Oil of bigarrede." Bitter oranges (*Citrus bigarradia*) come from Seville, and are largely used in making marmalade. *Varieties:* (1) The "China" orange. This is the common orange of the market. It is round and smooth, with a thin, golden-yellow rind. (2) A pear-shaped orange, with a thick, smooth rind, a rare sort, not much known in the markets. (3) The "Orange of Nice," which is grown largely about that city, is rough, thick-skinned, and is considered one of the best, both for size, productiveness, and quality. (4) The "Tiny-fruited" orange, with a thin, smooth rind. Supposed to have come from the Philippine Islands. (5) The "Fingered" orange, an ovate fruit with a thick rind. (6) The "Blood-red" orange, originally from the Philippines, with a medium-sized, round, rough fruit, the inside yellow, knotted with crimson. (7) The "Ribbed" orange, a tender variety of little value. (8) The "Sweet-skinned" orange, known in Paris as the "Forbidden Fruit." It is a heavy fruit, with a deep-yellow, smooth, thick, sweet rind. This is an extremely agreeable fruit. (9) The "Mandarin" orange, originally brought from China, is now cultivated in Malta. This is one of the finest varieties raised. (10) The "Saint Michael's" orange. This is one of the most productive and delicious of all oranges, and is imported in large quantities from the Azores.

LEMON (*Citrus*).—This is another variety of the orange family, a native of Eastern Asia, from whence it has spread to Italy, Greece, and Southern Europe, and to the West Indies. Its juice is analogous to the orange, but contains more citric acid and less sugar. The citric acid, which is extracted, is an approved specific against scurvy, and is used to make many pleasant drinks. The rind is a bitter aromatic, is used for stomachic tinctures, for preserves and liqueurs. It also yields an essential oil used in perfumery.

MILLET (*Holcus*) is an annual plant or grass, growing sometimes to the height of 20ft., the stalk being filled with saccharine juice. It thrives best on sandy soil, requiring little labour or manure, and is most prolific in warm climates. It is largely grown in Spain, Italy, Switzerland, the southern parts of Germany and France; also in the East Indies, China, Arabia, Syria, Egypt, and Nubia. In the West Indies it has been introduced, and is known by the name of Guinea corn. In the East it is used as human food, but in Europe, though sometimes used as food, it is chiefly used in feeding poultry and domestic animals. The leaves form fodder for cattle.

MANGO (*Mangifera*).—There are many varieties of this fruit, but the best is the *M. indica*, from India, which is imported as a pickle. It is also cultivated in the West Indies.

GUAVA (*Psidium*).—*P. moniforum* is a native of the West Indies and South America. *P. montanum* is a native of Jamaica. These tropical trees or shrubs produce guava, which is eaten raw or shipped to Europe as a jelly. The wood, very hard, of a fine colour and grain, works well, and takes a good polish.

CACAO or COCOA is obtained from the seeds of a tree, *Theobroma cacao*, order *Sterculiacea.*. The seeds are oval, about the size of an olive. When bruised they form the cocoa of the shops, and when reduced to a paste, mixed with sugar and vanilla, form chocolate. They are imported from Venezuela, Ecuador, Guayaquil, Brazil, and the West Indies. It is also cultivated in the Philippine Islands.

COFFEE is the berry of the *Coffea Arabica,* an evergreen shrub, which grows to the height of 8ft. to 15ft. The flower is like the jasmine, the fruit like a small red cherry, enclosing two of the oval seeds, covered with pulp, which form the coffee of commerce. The plants produce fruit when two years old, but the best is from those which are four to five years old. The shrub is indigenous to Abyssinia and to Arabia, where it is best grown; but it has been transplanted to many tropical countries, viz., the West Indies, South America, Java, Ceylon, India, Porto Rico, Sumatra, Bourbon, the Philippines, Cape of Good Hope, West Coast of Africa, and East Africa. We have no record of the first introduction of coffee as a drink, its use for centuries being confined to the East; but in the fifteenth century it was drunk in Aden as a refreshment, afterwards it was introduced to Cairo, and in 1554 to Constantinople, and this in spite of bitter opposition in both cities. The first coffee-house in London was opened by a Greek in 1652, and the number soon increased. The *cafés* of the present day bear witness to the advance of the temperance cause, and are a standing monument to this philanthropic movement.

PEPPER.—*Black Pepper,* the most important of all spices, is the product of a climbing plant (*Piper nigrum*), and is extensively cultivated in Malabar, from whence comes the best variety, Java, Sumatra, and neighbouring islands. The plants bear in their fourth year, are best at their seventh, and then decline. The culture is not difficult. Two crops are yielded annually, and are gathered before ripening. At first of a bright red, by drying in the sun the berries become black, and taste hot and fiery. White pepper is milder, and is produced from the same plant when ripe. It is freed from its dark coat by maceration in water. *Pepper* (*Long*) is produced from a climbing plant grown in the East Indies, the berries of which are small but exceedingly hot. *Pepper* (*Cayenne*) is a mixture of the powder of the dried pods of different species of capsicum, chiefly Spanish pepper and bird pepper, natives of South America and the East and West Indies. This is red in colour, very fiery and acrimonious, and is used chiefly as a condiment, and also in medicine, and in curry powder. *Pepper* (*Guinea*) is made from the aromatic seeds of *Agrana paradisi* and *A. grandiflorum,* found on the West Coast of Africa. It is a powerful stimulant, and is used for the same purpose as cardamons.

GINGER is the product of *Zingeberaceæ,* herbaceous plants which inhabit China, the East and West Indies, Africa, and America. There are two varieties, the black and the white, the former being inferior. The black ginger roots are immersed in boiling water and then dried. The white ginger consists of the best and roundest roots, which are peeled fresh and dried in the sun. The best preserved ginger which is sent to this country is prepared from the young roots, and is of a light-yellow colour. The Chinese preserve it dry, and use it largely as a condiment.

CASSIA.—There are a large number of species of this plant. The bark resembles cinnamon, and is believed to be indigenous to China, but is also cultivated in the Eastern Islands and the West Indies. *Cassia buds* are produced by the same plant as the cassia bark, of a dark-brown colour, and in flavour and taste are like cinnamon. *Cassia Oil:* This extract of cassia is acrid and pungent, and has an agreeable odour. *Cassia fistula* is like a laburnum, and is found in India and Africa. The leaves and flowers are purgatives. *Cassia acutifolia* grows in Egypt, Sennaar, and Abyssinia, and is the Alexandrian senna of commerce. *Cassia lanceolata* is from Arabia, and is known as Mecca senna. *Senna* is a valuable purgative.

CLOVES are the unexpanded dried flowers of the *Caryophyllus aromaticus*, a native of Molucca, but now it is grown in many of the neighbouring islands, and in Guiana, Brazil, and the Mauritius. The best are from the island of Amboyna, and should be large, heavy, and brittle, exuding oil when pressed, and their taste warm and acrid. The tree grows to the height of 15 or 30 feet. The leaves are aromatic, and the flowers very fragrant. *Clove Oil:* This oil has the flavour of the clove, but is milder, is of a deep red colour, and is a powerful stimulant.

CAPSICUM. (See Chillies.)

PINEAPPLE.—The succulent fruit of a tropical plant, indigenous to the West Indies and South America, but naturalised in the hot regions of Asia and Africa. It was brought to Holland, and from thence to England in 1690, and the cultivation has been brought to such a pitch of perfection that the hothouses of Great Britain provide more luscious fruit even than the tropics. They are grown very freely in the West Indies, and can now be bought in the English markets at low prices.

PIMENTO, or ALLSPICE (*Eugenia pimenta*), is the fruit of a tree common to Jamaica, the berries of which are gathered before ripening, and are dried in the sun. The name of allspice is given because the flavour resembles cloves, nutmegs, and cinnamon; and it is also called Jamaica pepper, because it is chiefly grown in that island. It is largely used as a seasoning, but also as a medicine.

The NUTMEG is the product of *Myristica Moschata*, a native of the Moluccas, but afterwards it was introduced into Sumatra, Java, many of the neighbouring isles, Guiana, and the West Indies. The tree bears fruit when ten years old, which improves in quality during a century. The fruit is of the size of an apricot, pear-shaped, and as it ripens the rind opens, displaying the nutmeg encased in a network of mace. The nutmegs are gathered two or three times a year—the third period yielding the best—and when dried in the sun are steeped in lime water to preserve them. The Dutch have almost a monopoly of this spice, and its introduction has been very slow elsewhere.

MACE.—The outer covering of the nutmeg has the same odour, but is more pungent. It is used sometimes medicinally, but chiefly as a condiment.

NUTMEG OIL is used for medicinal purposes.

CHILLIES are pods obtained from the *Capsicum frutescens*, cultivated in the East Indies. These pods contain many small seeds, pungent and fiery to the taste, and are used as a condiment. They are used to make cayenne pepper and curry powder. The capsicums used in Europe are from a wild species growing in the West Indies and South America.

ALOES.—A bitter juice extracted from a plant of the same name, and used as a purgative both for men and horses. Socotra, Cape Colony, Barbados.

ALOEWOOD is found in Assam, Cochin, and China, and being saturated with an aromatic resin, is much esteemed as an ingredient in incense as well as medicine.

CASTOR OIL is obtained from the seeds of the *Ricinus communis*, a plant which grows in America, Southern Europe, the East and West Indies, and which probably came originally from Africa. It was familiar to the Greeks and Egyptians. The oil is crushed from the seed in an hydraulic press, and, after heating with water, is strained through flannel and put into canisters. The best is called cold-drawn, and is used as a mild aperient. It is also used for machinery, but is not suitable for fine machinery, because it is too thick. The largest quantity imported is from India.

CROTON OIL is the extract of the seed of the *Croton tiglium*, a native of India, Ceylon, and the Moluccas. The seeds are the size of a marble, and are enveloped in a small shell. These seeds are the strongest purgative known.

CROTON (*Cascarilla*).—The bark of this croton is also used as a medicine, and is imported from the Barbados and the Brazils.

COCHINEAL.—A rich red dye obtained from the female of an insect *Coccus cacti*, a native of Mexico, which feeds on the *Cactus opuntia*. The insects, after being collected from the plants, are killed in boiling water, and then dried when they are like small grains. They yield a beautiful scarlet colour, and are chiefly used in dyeing wool. Now our chief supplies come from the Canary Isles.

PITCH is a substance made by melting resin with a portion of tar, and is also found in a natural pitch lake in the island of Trinidad in the West Indies.

CEDAR (*Abies*).—The cedar of Lebanon is a species of fir, and its qualities have long been famous. Those which remain are about nine feet in diameter. The Indian cedar, or deodar, is a noble tree, which grows in the Himalayas at an elevation of from 4,000 to 10,000 feet. Gamble says it is the most durable of Indian conifers, and is used for railway sleepers, bridges, furniture, and for shingles. An oil is obtained from it which resembles crude turpentine, which is used as medicine for ulcers and eruptions, &c. Another cedar (*Cedrela toona roxb.*) the toon tree, grows in Bengal, Assam, Burmah, to a great height, 80 to 100 feet of clear stem being often seen. It is known in the market as Moulmein cedar, and is durable, being suitable for door panels and carving. It is of a brick-red colour, and though soft does not split or warp. The Atlas cedar (*Cedrus atlantica*) grows on Mount Atlas, and is of a similar grain and strength to *Cedrus deodara.* Another cedar (*Callistris arborea schrad*) is a native of the Cape of Good Hope, but only grows to the height of 20 feet. It is useful for ship and house building as well as cabinet work. The red cedar (*Cunonia capensis*) grows to the height of 60 feet, the wood being tough, close grained, and taking a good polish. It is used by cabinet makers, turners, and wheelwrights. The Bermuda cedar (*Juniperus Bermudiana, L.*) is another variety. *Cedrele tooun roxb. woolia* (red cedar) is a tall handsome tree growing in Queensland. This is the best known and most valuable wood in New South Wales. It is easily worked, very durable, and a good specimen is equal in appearance and quality to the best figured mahogany. A tree is said to have been cut down yielding 30,000 feet of saleable timber. *Melia composita* (white cedar) is found in North Australia and Queensland. The wood is soft and easily worked, and is used chiefly for shingles. *Synoum glandulosum,* or pencil cedar, grows in Queensland to the height of 70 to 100 feet. This wood is scented, and when fresh is of a deep red colour, being used for cabinet work and in shipbuilding.

LIGNUM VITÆ (*Ixora triflorum*) of British Guiana, grows to the height of 30 to 60 feet, and is 16 to 18 inches in diameter. It is a hard, valuable wood, used for mill cogs and shafts, and for ships' blocks, &c. It is also found in Jamaica, Hayti, Cuba, Columbia, and Venezuela. Hickory Lignum Vitæ is found in Queensland. The wood is hard and close-grained, The bark contains tannin, and is used by the natives in making embrocations to cure cutaneous diseases.

LANCEWOOD.—This tree (*Guatteria virgata*) is indigenous to Jamaica, and is highly valued, because it exceeds even ash in lightness, strength, and elasticity, and is consequently of value in carriage shafts, spears, bows, and similar purposes. It turns well, and is neither so light in colour or so close-grained as box.

DYEWOODS.

LOGWOOD (*Hæmatoxylon Campechianum*) is grown chiefly in Campechy and Jamaica. At one time it was largely used as a dye for compound colours, greys, and blacks, but latterly this, like many other natural dyewoods, has given place to chemical substitutes.

FUSTIC is a dyewood obtained from a species of mulberry, *Morus tinctoria*, a native of the West Indies and tropical America. The yellow dye which is obtained from it is durable, and is chiefly used in compound colours. There is another kind, the product of *Rhus colinus*, a native of France, Italy, and Greece, which also produces a yellowish orange dye.

MAHOGANY.—This beautiful cabinet-wood is the product of the *Swietonia mahogani*, a native of the West Indies and Central America. It is found chiefly in the rich valleys of Cuba and in Honduras, and is supposed to take about two hundred years to mature. There are two kinds, baywood, which comes from America, and Spanish mahogany, which chiefly comes from Cuba and Hayti. The first is used for inferior work, and the latter for the best veneering, taking a beautiful polish, and improving with age. Another mahogany, called red speke wood, comes from South Africa, and is durable for outdoor work. Mahogany also grows in British Guiana. Booah mahogany, a tree which grows from 60 to 130 feet high, yielding a durable wood, grows in Australia, and is a species of eucalyptus. Another mahogany, *Tristania suaveoleus*, grows in North Australia and Queensland to the height of 100 feet. The wood of this tree is durable if used in wet situations.

SATINWOOD.—A moderate-sized deciduous tree, which produces a hard beautiful wood, which takes a splendid polish, and in England is used for cabinet work. In India it is used for furniture, agricultural implements, carts, oil mills, &c.

SNAKEWOOD or *Nux vomica* is a tree or shrub growing in India and Burmah. It is used for carts and agricultural implements. Strychnia is obtained from the seed.

COTTON.—*Gossypium barbadense* is a shrub growing to the height of six to twelve feet. The fibres are long and fine, and separate easily from the seed, and they are sufficiently delicate to be spun into a fine thread. It was from the seed obtained from the West Indies that the celebrated Sea Island cotton is grown. In the last century our largest supplies of cotton came from the West Indies and South America, and it was not until about 1791 or 1792 that cotton was cultivated to any extent in the United States. Now the cultivation of cotton has almost been abandoned in the West Indies, owing to the cheaper rate at which it can be grown in the United States and elsewhere.

GEOGRAPHY OF THE ISLANDS.

JAMAICA, the principal British island (the Tayamaca of the aborigines), is 143 miles long by 40 to 45 miles broad, and is 4,000 miles south-west of England, with an area of about four million acres. The chief town is Kingston, and the only navigable stream is the Black River. The Blue Mountains occupy the middle of the island, with an elevation of from 5,000 to 6,000 feet. There is a coast line of 500 miles, and there are nearly 100 harbours, coves, and creeks, so that the want of rivers is not felt. The soil is productive, and all the richest plants of the tropics thrive and yield abundantly. Sugar is the staple product, but arrowroot, coffee, cocoa, indigo, cotton, ginger, turmeric, ipecacuanha, mango, tobacco, aloe, nutmeg, clove, cinnamon, pepper, China grass, Assam tea plant, oranges, pineapple, banana, plantains, cinchona, Indian corn, Guinea corn, rice, yams, cassava, sweet potatoes, and a great variety of fruits. The woods are mahogany, satinwood, cedar, logwood, fustic, and many other kinds. The earth products are iron, copper, lead, cobalt, zinc, manganese, limestone, barytes, marble, gypsum, lignite, iron pyrites, lithographic stones, and coal. The island was discovered by Columbus in 1494, and was afterwards captured and colonised by Cromwell, the English continuing the policy of importing negro slaves which was commenced by the Spaniards. In 1775 the population consisted of 12,737 whites, 4,093 free negroes, and 192,787 slaves; and from 1791 to 1807 the average importation was 9,000 per annum, whose market value ranged from £30 to £50 per head, the excessive cheapness of this labour making it more profitable to import than to rear them.

BARBADOS is about the size of the Isle of Wight, being 21 miles long by 12 broad, and has a superficial area of about 166 square miles. Population 170,000. It is supposed to have been discovered by the Portuguese in 1518, but was taken possession of by Sir Olive Leigh, in the name of King James of England, in 1605. A heavy duty of 4½ per cent on exported articles, which was imposed in Charles the First's time, and which was only finally repealed in the present reign, tended to retard the prosperity of the island. The climate is salubrious, the soil varied, being in some places light and sandy, and in others of a rich black earth. Its chief products are sugar, molasses, rum, cacao, coffee, aloes, cotton, arrowroot, &c. This island being flatter than most of the islands is well cultivated.

ST. LUCIA lies about 90 miles to the N.W. of Barbados, and covers about 160,000 acres. Population 32,000. For many years France and England contended for its possession, and the point was not settled until 1804, when it was captured by Lord Hood. It is a beautiful island, divided by a lofty range of mountains, clothed with trees, and its valleys and alluvial plains are covered with a deep vegetable mould. It has had a bad reputation for salubrity, but since better drainage has prevailed, the health of the people has improved. The island will produce sugar, tobacco, ginger, cotton, and many other tropical products, whilst the splendid harbour of Castries affords facilities for their shipment.

ST. VINCENT.—This picturesque island lies 22 miles south of Grenada, is 18½ miles long by 11 broad, and contains an area of 84,000 acres. Population 36,000. After various attempts to settle on this island, on the part of the French and English, it was captured by the latter power in 1762, recaptured by the French in 1779, and in 1783 restored to the English. The soil in the valley is a rich loam, and occasionally a fine black mould, capable of producing cotton, tobacco, cacao, coffee, indigo, &c. Of late years arrowroot is an important commodity exported.

GRENADA is the most southerly of the Caribbean group, and one of the most beautiful of the West India Islands. It is 24 miles long by 12 broad, and its area about 76,000 acres. Population 40,000. The island was discovered by Columbus in 1498, and after constant warfare between the French and the English was ceded to the latter power in 1783. Its origin is volcanic, and there are indications of iron, copper, and gold. The soil in the lowland is a rich black mould, on a substratum of clay, and the island produces sugar, indigo, cotton, &c.

TOBAGO lies 63 miles south-east of Grenada, is 32 miles long, with a breadth of about 9 to 12 miles, and the area about 97 square miles. Population 18,000. The island was discovered by Columbus in 1498, and named Assumption, but was afterwards called Tobago or Tobacco, because of the use of this herb by the Caribs. The island, after being in possession of the English and French alternately, was formally ceded to Great Britain in 1814. The climate is salubrious, the soil good, and sugar, cotton, coffee, cacao, cocoanuts, indigo, allspice, and pimento are cultivated.

TRINIDAD.—A large and valuable island, the most southerly of the British West Indies, is 50 miles long by 30 to 35 broad, with an area of about 2,000 square miles. Population 120,000. It was discovered by Columbus in 1498, and after being occupied by the Spaniards was finally captured by and remained in the possession of the English. Trinidad has a great harbour, the Gulf of Paria, in which ships may anchor and ride with safety; and the soil, which is very fertile, produces sugar, rum, cinnamon, cloves, nutmegs, cacao, chocolate beans, coffee, vanilla, annotto, arrowroot, indigo, &c. Here also is the celebrated pitch lake, so called because of the bituminous matter which collects and floats on the surface of a fresh water lake. This exudation is from diluvial clay hills, and is produced in the same way as the green tar of Barbados. Iron ore, sulphate of copper, copper pyrites, quicksilver, arsenic, plumbago, have all been found in the island. The climate is better and less humid than that of Guiana, the temperature, especially on the north coast, enjoyable, and the natives are more muscular than those of the other islands.

Antigua, Barbuda, Dominica, Montserrat, Nevis, St. Kitts, Anguilla, and the Virgin Islands form the Leeward portion of the Caribbee group.

ANTIGUA contains an area of about 70,000 acres. It is salubrious and the soil good. Sugar is produced in large quantities. Population about 36,000.

BARBUDA lies 30 miles north of Antigua, and is about 19 miles long by 10 broad. Population 1,600.

DOMINICA is 28 miles long and 14 broad, with an area of 186,000 acres. Population 28,000. The soil is good, and well adapted for the production of sugar and coffee.

MONTSERRAT is about 30 miles north-west of Antigua, and has an area of about 30,000 acres. Population 7,000. Sugar is grown here, and a large business is now done in lime juice.

NEVIS lies to the north-east of Montserrat, and has an area of about 20 square miles. Population 12,000.

ST. CHRISTOPHER'S (or ST. KITTS) has an area of about 43,000 acres, and was probably the first island in the West Indies colonised by England. Population 29,000. This island is extremely dry and healthy.

ANGUILLA is the most northern of the Caribbee Islands, and has an area of about 35 square miles. Population 3,000. The climate is salubrious.

THE VIRGIN ISLANDS.—These are a number of islands, discovered by Columbus in 1493, and named by him. Tortola is the chief of the British islands, being about 12 miles long and four broad, and the total area of all the islands is about 60,000 acres. Population 5,000. Santa Cruz (Danish) and St. Thomas (Danish) have a population of about 26,000 and 13,000 respectively.

The archipelago called THE BAHAMAS consists of a number of small sandy isles stretching between Hayti and East Florida. The total area is about 3,521 square miles. Population about 40,000. They produce cotton, mahogany, brazilletto wood, lignum vitæ, satinwood, cedar, pimento, wild cinnamon, and fruit in abundance, especially pineapples, oranges, lemons, and increasing quantities of Indian and Guinea corn and vegetables of all sorts. The base of the islands is coral, and the surface substratum consists of *debris* of coral, marine deposits, and vegetable matter. The porous quality of this covering retains the moisture, and this, coupled with a temperate climate, causes vegetation to flourish and makes them a suitable resort for invalids troubled with pulmonary complaints.

The BERMUDAS lie 600 miles from Cape Hatteras, and are said to be as numerous as the days in the year, and have an area of about 12,000 acres. The climate, excepting for three months, is genial and salubrious, the fields and trees are always green, while the rains are few, though heavy while they last. The heaviest exported articles are potatoes: arrowroot, which at one time was a leading article, having fallen off, although the quality was good. Only about 10,000 out of 12,000 acres are cultivated.

The BAHAMA ISLANDS are all British, and are more temperate in climate than the Greater Antilles.

ISLANDS OFF THE SOUTH AMERICAN COAST.—Buen Ayre, Curaçao, Tortuga, and Oruba (Dutch), Coche, Margarita, and Curgua (Venezuela).

BRITISH GUIANA is the country extending from the Courantin river westward of the Orinoco and from the seacoast to the sources of the river Essequibo and Courantin, its area having been estimated at 76,000 square miles. In 1878 the population was 225,000, exclusive of aborigines, of whom it is difficult to obtain information. The chief town is Georgetown, with a population of over 25,000, of whom a large proportion are negroes. The great industry is that of sugar raising, and to cheapen the cost of production large numbers of Chinese and coolies are imported, who work at a low rate of wages, whose rights are carefully safeguarded. Lately an important trade has sprung up in balata or guttapercha. The splendid timber forests are another source of wealth, which supply teak and other valuable woods in almost unlimited quantities.

TECHNICAL EDUCATION.

Seeing that the geographical cases promised to be a success, I was led to take another step onwards, and this time in the direction of simple, technical education, and this was by means of the technical cases exhibited The sight of the imported objects naturally causes the question, "And what do you do with them?" The technical boxes supply the answer in many cases, though it is obviously impossible to do so in all.

The porcelain case, which you have seen, is one of the most interesting and complete, and was arranged at the Worcester Porcelain Works; that showing the different stages of candle making, both from palm oil and stearine, by the Price Candle Company. Another interesting case is that illustrating paper-making, not only from rags and straw, but also from Esparto grass and from wood pulp.

Cotton is shown in its raw state, through the spinning stages to the finished cop and cloth, and to make the case more complete specimens of printed cloths are added, which are intended both for home and foreign use. Wools of different kinds, including mohair and alpaca.

Soap making, mathematical and drawing instrument making, by Messrs. Thornton and Co., of Manchester, show the perfection to which these branches of industry have attained.

Jute, silk, the products, and by-products of pyrites and manganese, ultramarines, glass, are also either complete or almost complete, and it is hoped before long that the list will be increased.

THE HANDBOOKS AND THEIR USE.

Handbooks will be issued with these, for the guidance of the teacher, but as it is manifestly impossible to deal with such subjects in an elementary school with any degree of minuteness, it is intended to keep them as simple as possible. So far they have proved useful for giving object lessons, and both the technical cases as well as the geographical supply a want in this direction, and if judiciously used ought to ease and not increase the work of the teacher. For my own part I am a thorough believer in technical education, but the chief fear which those have who are desirous of introducing technical education into our schools, is the difficulty of doing so without overburdening our already over-worked teachers. It is all very well for theorists to say that such and such subjects should be taught, but it is very generally admitted that teachers have quite as much to do as they are physically capable of, and although the increase of power proposed under the new code is a step in the right direction, still it is not enough, for although this will ease the teachers the children will still suffer.

It can hardly be denied that over-pressure exists, and the first step to ease both teachers and children must be by the simplification of the work required in the elementary schools. To do this efficiently the establishment of primary and secondary schools is absolutely essential. There is no use tinkering with the present code. If the work is to be done well the schools must be remodelled and the work prepared on a common-sense practical basis. In the primary schools the children should be taught fewer subjects, but those subjects should be taught more thoroughly, so that the children, instead of learning in a parrot-like way, should be able to see the why and the wherefore of what they are taught—this being simply impossible under the existing code. Our present system is not elastic enough. It is too rigid. There is not enough play in the machine, and the consequence is that the town boy gets the same education as the peasant, as if they were intended for similar positions, and they are all forced to take the same dose, like the boys at Mr. Squeers's school.

To give a thorough, practical education, it is absolutely necessary to divide the schools into elementary or primary, and into secondary schools, so that a sound, useful education may be given in the former and a practical technical education in a complete form in the latter Above all, we must teach our children in both departments to use their fingers as well as their brains, and as far as possible to suit the education to the requirements of the district in which they live.

The deterioration of house servants, the miserable state of many a working man's home, all point to an absence of true practical education; and it is, therefore, a matter of deep thankfulness to see that practical useful subjects, such as cookery, laundrywork, useful sewing and kindred work, are being taken up more and more; but the advance is being made outside the Department, and almost in spite of the Department, for many schools which have introduced cookery have not got their money back, because of the 17s. 6d. limit.

We call ourselves a practical nation, but in some things we are not so; and we have only to turn our eyes to the work done on the Continent to show us our shortcomings—not that their system is by any means perfect, but still they are more advanced in many ways than we are.

Take the subject of "Slöjd" as taught in Scandinavia, and its value to those who emigrate, as compared with the education we give our peasants, who ought to fill our colonies, and we soon perceive the worthlessness of the latter. Or, again, take the facilities which are given by many of the Continental nations—Germany, Belgium, France, and Switzerland—for obtaining practical technical education, and our shortcomings are still more manifest. The teachers in these schools are all helped by technical museums, some of which are most elaborate, notably those at Zurich, at several centres in Germany, in France, and in Belgium.

It must thus be apparent to all that secondary schools, with full and complete appliances for obtaining a useful education, are absolutely necessary if we are to keep pace with the times, and to do this we must not be ashamed to take a leaf out of the book of our neighbours.

For instance, take the case of a German who wishes to start in business in England. When he lands on our shores he knows the language, and that is half the battle. But how many Englishmen take the trouble to master the language of the country where they intend to trade, and if they wish to do so where can they learn? Suppose a Manchester shipper wishes to send out a clerk to India to trade direct with the natives and open our markets, what chance has that clerk to learn the native languages?

If we are to hold our own and open new markets, steps must be taken to give our young men a chance of obtaining this knowledge. There are plenty of countries open to us: we have only to seize our opportunity and push our wares, and there are plenty of young energetic men who will be glad to go if they are properly trained.

The late Mr. Alderman Goldschmidt.—The following account of the funeral of one of the founders of the Society and one of its trustees will be referred to with interest and sympathy. The remains of the late Mr. Alderman Philip Goldschmidt were interred at the Southern Cemetery, Withington, on March 11. The respect and esteem in which the deceased was held throughout the city was evidenced by a demonstration of imposing proportions. The interment was preceded by a short service in the Protestant chapel of the cemetery, conducted by the Rev. S. A. Steinthal, of the Cross Street Unitarian Chapel. The edifice was crowded with the family and friends of the deceased, and hundreds were unable to gain admission. The ordinary burial service was impressively read, after which the Rev. S. A. Steinthal addressed the congregation. He said: It has hardly ever fallen to my lot to have so hard a task as that which is mine to-day. There are times when it is impossible to say anything which can really tell what is in the heart. Thus is it with me to-day, when I feel that I am following to his last earthly resting-place one who has been one of my most honoured, truest, and kindest friends. "The Lord gave, the Lord hath taken away, blessed be the name of the Lord!" Well is it for us that we cannot help acknowledging, even in the fresh bitterness of our own affliction, that God, whose mercy is over all, has been gracious indeed unto our dear brother, and that however we may feel stricken, to him death has been a release from weakness and from suffering, an entrance into that peace which the Psalmist tells us is the end of the upright man. Our comfort and our strength to-day must come, not from any thought of self, but from remembering now such a life of unfailing benevolence, of self-sacrificing devotion to the wellbeing of others, of such tender, loving consideration for the wants and necessities of the sick, the poor, and the afflicted—such a life as our friend lived is the most fitting preparation for entrance into the blessedness of that kingdom in which the Father of Universal Love is all in all. It is not possible, nor would it be right, even if possible, to tell even of a tithe of what Mr. Goldschmidt has done, and thus to prove how the words I have just used in describing his life are but a faint summary of the actual facts. The presence here of so many who yearn to show their reverent love for him, representing as they do all sorts and conditions of men, all parties and all sects, is evidence of how wide his charity has been. It has known no narrowing limitations, but has gone forth freely to all in need. But while his kindness has thus been ever freely poured forth, so widely that I think no one who knows how many sad hearts it has cheered, and how much sorrow it has comforted, we must remember with grateful hearts what thoughtful consideration he bestowed in its exercise, and with what wisdom he has directed the management of those benevolent institutions which were the special objects of his personal interest. Other men have given money, but few have been able by their personal work to do what has been far more valuable than even the liberal pecuniary gifts he bestowed. His own ardent zeal aroused a kindred spirit among his fellow-workers. Educational institutions, associations for providing recreation and healthy exercise, had in him a most sincere friend. The Eye Hospital will be acknowledged by all connected with it to be itself a monument of how efficiently he knew how to organise in active completeness forces which might never, but for him, have been guided into such beneficent efficiency. The Infirmary, during his treasurership, has become as admirable for its economical as it has always been in its medical and surgical efficiency. Southport and Buxton are witnesses as well to the peculiar gift Mr. Goldschmidt possessed for hospital administration. What must I say of the great public services which Mr. Goldschmidt rendered to this city of his adoption? It is a benefit to the community if anyone establishes in it a business of so extensive a character as that over which our friend presided, but only too often do we find that men with such heavy responsibilities do not give more than this inevitable advantage to their neighbours; but our friend was not content with it, nor with his practical co-operation in all possible branches of charitable activity. He did the community the great service of freely devoting to the public good a vast amount of time and thought, entering into the municipal management of the district in which he lived, and then into the Council of this great city. He was able there to accomplish more than most of his colleagues. Manchester is and will be grateful to him for the large sums which he has given to her public institutions, but she is indebted to him even more largely for great sums which he has prevented her needlessly expending by the judicious plans of administration he successfully carried. That he twice was called upon to fill the high office of mayor was a proof how highly his work was esteemed by his colleagues. Though Manchester has for so many years had foreign citizens to whom it has given an honourable welcome, and who in return have shown themselves faithful and generous in their adopted home, yet Mr. Goldschmidt was the first native of Germany who had filled the chief magistracy of this city. How admirably he did fill that office, with what courtesy and generous hospitality, with what overflowing charity and yet firm discrimination between real and pretended need, how truly he served the city, we all remember, and his portrait hanging in our public gallery will remind coming generations of the good which he has done in such varied ways, and will, I trust, encourage others to follow his noble example of faithfulness in every branch of duty which he felt called upon to undertake. He had a clear understanding, an ever-open well-trained mind, and, above all, a heart so generous and so kind that no appeal of real distress came to it unrelieved. Yes, he was all this; but if he was all this, must he not have been still more than this? He was himself mindful that he had been blessed in life, and he was grateful to the Father in Heaven, from whom all good gifts come, for what he had received, and he used all as a faithful steward whom the Father had blessed. Yes, blessed he was in life, though not without his trials. He looked back upon a successful business career which enabled him to follow out the benevolent instincts of his generous nature. He was blessed with a wife whose loving sympathy helped him in all his public work while she was spared to him, and made his home indeed full of joy. It was his bitterest trial that five years ago, within but a very few days, she was suddenly taken from his side. They are reunited now. It must be a comfort to his children to know how they in his bereavement helped him to bear his sorrow, and how proud he was of them. Yes, his was a blessed life. He had passed our allotted threescore years and ten, and had drawn near to fourscore. During the last months physical weakness and discomfort tried him sorely. He complained that his memory was not as strong as it had been; compulsory inaction was a burden to a man who had never been content even with the conduct of a large business, and had not found the guidance of a great city's affairs work too much. He is set free. He has gone unto his reward. He has done the work of a true man, and rests in God. But our hearts still must grieve, for what do we not lose in bidding him farewell? Where can we find comfort but in communion with God, in whose presence, when our time comes, we shall greet again the loved ones whom now, with fainting heart, we mourn?

The coffin was then borne to the graveside, and deposited in its last resting-place, the Rev. S. A. Steinthal officiating.—*Manchester Examiner.*

Garenganze.—The extraordinary work of Mr. F. S. Arnot in search of a healthy plateau between the Zambesi and the riverine lakes of the Livingstone or Upper Congo river is told with graphic power in this little book. The journeys taken were not quite over the same ground as that covered by Livingstone, but very nearly so, and both travellers find their way to Cazembe. The story was told to the Royal Geographical Society in January last, and in this reprint details are added which makes the narrative very interesting indeed. We understand Mr. Arnot has returned to these countries, accompanied by his wife, and we shall watch his future progress with considerable sympathy. He gives a clear account of the countries traversed, and is quite alive to the need of commercial enterprise by which to destroy the slave trade; but he is singularly devoted to the work of the elevation of the spiritual and moral condition of the people, and his simple, unadorned, and refreshing story will be a great delight to those who have the good fortune to read it. Like all who have gone before him in these districts he has had his sufferings, but he has also had his triumphs.

TARANAKI.

By MR. R. HENRY GIBSON, B.A., OF TARANAKI, NEW ZEALAND.

[Read to the Members in the Library, January 16th, 1889, by the Secretary.]

THE Province of Taranaki, or, to speak correctly, the Provincial District of Taranaki, on the west coast of the North Island of New Zealand, though one of the most beautiful and not the least fertile regions in the whole colony, has, since its first settlement—not far from half-a-century ago—down to the present date, been, for several reasons, one of the least known and least settled. Hemmed in between a vast and all but impenetrable forest on the one hand, and the ocean on the other—having a coast affording along its whole length not even a safe roadstead—surrounded by hostile native tribes—cut off from almost all access, save by sea, from the rest of the colony—such was, for many years, the condition of Taranaki. Moreover, unlike the more favoured provinces of Canterbury and Otago in the South Island, there were in Taranaki little or no funds available for making roads and bridges, or for constructing a harbour, the wealth resulting from the valuable land endowments elsewhere being here locked up, chiefly through what is termed the native difficulty. Only a very few years ago, the visitor or emigrant to Taranaki who arrived by sea, had to land at the Port of New Plymouth, the capital of the Province, in a surf-boat, in shape and size resembling a cross between a whale-boat and a coal-barge, provided the heavy rollers of the South Pacific did not render this impracticable, and oblige the steamer to carry on its passengers to the sheltered harbour of the Manukau, the port of Auckland on the west coast, a hundred miles to the north. This carrying on passengers, and more frequently cargo too, occurred sometimes not only once but twice or thrice during the stormy season. In calm or comparatively calm water, the steamer used to anchor about a mile from shore, in the open roadstead, when its male passengers, unless of a weak physique or of nervous temperament, had to climb down the vessel's side by means of a rope-ladder, or else jump from the gangway into the arms of a stalwart boatman or on to the top of a mass of miscellaneous freight, not always of the softest material, piled up on the surf-boat, bobbing and rolling below. The lady passengers were seated in a tub, in which the adventurous fair squatted one at a time, and having first been hoisted aloft by a running tackle suspended from the steamer's yard-arm, were then gently lowered into the expectant arms of the gallant crew of the same boat. It speaks much for the skill and courage of this surf-boat crew, that during the many years of the performance of this difficult and often dangerous landing service, only one fatal accident occurred. This landing process was completed by carts and light wagons, called expresses, being driven into the water for several yards, to convey the passengers and freight from the surf-boat to dry land.

In 1879, when the writer of this paper first came to Taranaki, he travelled overland from Wellington, the capital of New Zealand, a distance of about 260 miles. This journey then occupied four to five days, the last of which was devoted to jolting, or rather jumping, over a mere track cut through the forest at the foot of Mount Egmont, and connecting the new settlement of Normanby with the existing terminus of the railway, from New Plymouth to the village of Inglewood, the distance thus traversed by track being about thirty miles. Driving in a springless cart over a ploughed field was a joke to the bumping and thumping. At one spot, when the four horses dragging the heavy lumbering vehicle called Cobbe's coach, in universal use throughout these colonies, were galloping down one steep slope to gallop the better up the other, the driver shouted to us inside, "Hold hard there! My brake's broke, and I'm going to *fly!*" *Fly* he did, literally leaping, coach and horses, over a small gulley (ditch) at the bottom.

Till this road was finished—since followed by a railway joining Wellington to New Plymouth—the immense forest clothing the slopes of Egmont, whose majestic cove, covered with eternal snow, is visible from every part of Taranaki, was impenetrable by ordinary humanity, unless it were a Maori war-party, or a bush-whacker. The undergrowth of this as of nearly every other forest in New Zealand, is semi-tropical in denseness and luxuriance. Huge creepers are festooned from one tree trunk to another, often in the most lovely and fantastic shapes. Supplejacks or native canes trip up the heels of the unwary "new chum," knock off his pot hat, and affectionately embrace his neck and limbs; long green withies, provided with sharp thorns, and often marvellous tenacity of grip, locally termed "lawyers," tightly grasp every part of his luckless person. Tree ferns, fifty to sixty feet high, with fronds measuring fifteen to twenty feet in length, with smaller brethren of their countless tribe, cool him, when over-heated with frantic struggles to escape, by dropping water down his back. Need it be said that that ubiquitous and restless personage termed "The Globe Trotter," and the veracious authors of books like Greater Britain and Oceana—who know everything and can tell you everything of the British Colonies after having "seen 'em at a glance"—are very rarely beheld in these remote localities? I venture to affirm of these omniscient gentlemen in general, that they are as accurately and extensively acquainted with the real condition of, say, New Zealand, and the actual life of its colonists, as may be expected from the social intercourse of a few days with some wealthy settler at his hospitable abode, or, more frequently, from the smoke-room conversation of a cosy city club, always ready to welcome a distinguished stranger.

A short but as correct as possible description of the Province of Taranaki, in which a former Manchester man has spent nearly ten years as a settler, and many places in which he has repeatedly explored, may not be without interest to the members of the Manchester Geographical Society.

The Province, since 1876, when provincial Governments were abolished, officially designated the Provincial District of Taranaki, had its origin in the year 1840, at the settlement of the town of New Plymouth, founded by the "Plymouth Company of New Zealand," in conjunction with "The New Zealand Company." The boundaries of the province were defined, under the Constitution Act of the colony, in the year 1852. Taranaki was at that time called "The Province of New Plymouth," but an Act of the General Assembly of New Zealand, in the year 1858, changed that name into its present. The Province consists of the western projection of the Northern Island, lying between 40° 10′ and 39° 30′ south latitude, or in nearly the corresponding latitude north of the coast of Portugal, between the mouth of the Tagus and Mondego rivers. Its longitude lies between 173° 40′ and 174° 55′ east of Greenwich, or in the corresponding longitude of only one other portion of land upon the globe—that of the extreme north-east of Siberia, bordering upon Behring Sea. The area of Taranaki contains, according to the latest official returns kindly furnished me, 2,429,510 acres, or rather more than three times the area of the county of Chester, in England. Of this area, 1,916,910 acres may be described as forest land; 512,600 acres as open land. The proportion of settled land, of every sort—forest clearings included—is officially stated at 491,530 acres. The southern and western boundary of Taranaki is formed by Cook Strait and the South Pacific Ocean respectively. The coast along Cook Strait, where that passage between the North Island and the South Island measures from sixty to eighty miles in width, extends from the mouth of the Waitotara river, separating Taranaki from Wellington Province, as far as Cape Egmont, the extreme westerly point of the district, a distance, in a direct line, of seventy miles, in a direction west by north. From Cape Egmont to the mouth of the River Mokau, separating the provinces of Taranaki and Auckland, the line of coast, continuing to follow the curve round the base of Mount Egmont, trends in a general direction of east north-east for a remaining distance of sixty miles. The total length of the coast of Taranaki, measured along the indentations, is 145 miles. This sea-coast, along Cook Strait and the South Pacific, comprises few if any considerable inlets, and not a single natural harbour of even a third-rate excellence. The mouths of the Patea, Waitara, Urenui, and Mokau rivers, the only navigable rivers within the province, having an outlet along its coast, are blocked by more or less formidable bars, rendering egress and ingress both difficult and uncertain even to the comparatively small coasting steamers which ply between the several ports of the North Island's western coast. This coast of Taranaki is, speaking generally, composed of bare, precipitous cliffs, in height between 100 and 300 feet, rising, however, to the height of nearly 900 feet a few miles south of the Mokau, in the bluff known as the White Cliffs, or, in the native tongue, Parininihi. Low sandy beaches stretch, at not unfrequent intervals, along the base of these cliffs for a reach of between two to five or six miles. Between the cliffs also run a number of gulleys or gorges, most of them clothed with ferns and intersected by clear streams. The general aspect of Taranaki from the sea is bare and uninteresting. The symmetrical cone of the extinct volcano, Mount Taranaki, or Egmont as it was named by Captain Cook, towering to a height of 8,280 feet in solitary magnificence, its peak capped with perpetual snow, and for half the year clothed with a mantle of the purest white down its precipitous sides, forms, however, as viewed from the Pacific, from whose very bosom this majestic mountain appears to rise, an object than which nothing more glorious is to be beheld. A picturesque group of rocks exists two miles south of New Plymouth, likewise volcanic, called the Sugar Loaves, or in Maori, Ngamotu. The highest of these, Paritutu, rising to 504 feet directly from the sea, affords from its summit a distinct view, in favourable weather, of the mighty mountain Ruapehu, its triple peak crowned, even in summer, with a mass of snow, the giant of the North Island, rising to an elevation of upwards of 9,000 feet. One of these Sugar Loaves—all of which, except the last-named Paritutu, are insular—called Moturoa, forms an important shelter to the New Plymouth breakwater, recently constructed to form an artificial harbour for the province. This harbour, thus formed, albeit at heavy cost, is accessible at all tides to vessels of as much as one thousand tons, and forms the chief port of call for the fine steamers of the Union Company of New Zealand, running between Wellington and Auckland along the west coast, as well as for other coasting craft. The harbour is connected by railway and road with the neighbouring town of New Plymouth. Though Mount Egmont is by no means one of the loftiest in New Zealand, where in the South Island many mountains rise to a height of from 9,000 to upwards of 12,000 feet (Mount Cook, the loftiest summit in the colony, being 13,200 feet), there are none which present a more magnificent appearance. Standing, as it does, close to the coast, on the centre of the rounded peninsula which composes, as has been stated, the western portion of Taranaki—its steep and weather-beaten sides, broken here and there by deep gorges, clothed lower down by evergreen forest-growth on its northern and eastern aspects, its symmetrical slope descending over a distance of between ten and fifteen miles to the level line of coast, curving gracefully round its base—innumerable streams of crystal water flowing along its ravines down to the plains below, their banks, to an elevation of 2,000 feet, clothed with the most exquisite ferns and foliage of perennial verdure—its summit now wrapped in clouds of the most fantastic shape and beautiful colours—now, especially an hour before a winter's sunset—displaying the dazzling whiteness of its snow-clad slopes, tinged a pale rose or purple—Mount Egmont, the pride of every Taranaki inhabitant, Maori or Pakeha (European), may well boast itself of being if not the biggest yet one of the sublimest and most lovely objects in the world. Between the western side of Mount Egmont and the coast stretch two ranges of much lower elevation—the former, called Pouakai, or The Ranges, attain 4,600 feet, or considerably above the height of Ben Nevis; the latter, called the Patua or Kaitake Range, reach some 2,000 feet. The first are covered with forest and scrub to within a thousand feet of the ridge, and for the remaining distance with coarse grass, dotted over with volcanic rocks; the second, of singularly graceful outline, are clothed with luxuriant vegetation to the summit. Along the coast of Taranaki, over the distance of 145 miles, between the Waitotara and Mokau rivers, at either end, no fewer than 125 *named* streams, besides others not denoted, flow from Mount Egmont and the Ranges into the Pacific.

The country extending inward from the west line to a distance which varies from two to ten miles consists largely of open, level land—land that is free from heavy bush, and, where not broken up, covered with fern or scrub, gently undulated and intersected by shallow gullies. The greater portion of this district is well adapted for dairy farms and cattle grazing. The richest part is comprised between Waitotara, on the borders of Wellington Province in the south, and the small town of Opunake in the north-west, a distance of not far from seventy miles, and stretching inland to a width of from two to six miles. The richest portion of this entire region is called the Waimate Plains, some years ago the scene of more than one sanguinary struggle between the colonial forces and the rebel natives, now dotted over with flourishing settlements, and intersected by excellent roads. Ample reserves of some of the most fertile lands hereabouts are occupied and owned by the Maories, their head chief, Honi Pihama, being one of the wealthiest cattle owners in the locality. Most of this extensive and fertile country is open, level, exceedingly well watered, and affords rich pasture for herds of cattle and flocks of sheep, besides numerous horses and pigs, the two latter class of animals being owned as usual in large numbers by the natives. The price of the best land on the Waimate Plains, on or near the trunk road which runs along the entire seaboard of Taranaki, from Waitotara to the Mimi River near the White Cliffs, was a few years ago as high as £11 per acre, unimproved; its present average, including all improvements, say an addition of at least 25 per cent on the original cost, is only £6 to £8 per acre. The chief drawback to this otherwise favoured district is its exposure, unsheltered either by natural tree growth, or the least attempt—save here and there an artificial planting—to plant against the cold southerly and south-westerly winds which are prevalent in a New Zealand winter and spring respectively; also its great distance from a port for shipping cattle and produce.

A few miles further back, and nearer the foot of Egmont, excellent pasture land, covered partially with scrub or light brush only, may be had at considerably lower rates. Cross roads are gradually opening up this and other neighbouring districts; the chief obstacles being want of money, especially to build bridges over the numerous water courses, and the scarcity of stone or gravel, called "metal," general throughout the Province. Besides the townships of Patea and Hawera on its southern border, where there are stations on the railways leading from New Plymouth to Wanganui and Wellington, there are on this district and the Waimate Plains the small townships of Manaia, Oeo, and Otakeko, all situated on the main road. Between this strip of open fern-land along the seaboard, and the above line of railway running near the

ACCOUNT OF LAND IN CULTIVATION AND AGRICULTURAL PRODUCE, FEBRUARY, 1888.

Registrar-General's Office, Wellington, 17th April, 1888.

THE results of the collection made in February last are published for general information.

E. J. VON DADELSZEN, Deputy Registrar-General.

Provincial District.		Number of Holdings over One Acre in Extent.				Extent of land broken up, but not under Crop.	In Wheat.		In Oats.			In Barley.		In Potatoes.	
		Freehold.	Rented.	Part Freehold, part Rented.	Total Numbers of Holdings.	Acres.	Acres.	Estimated Gross Produce (in bushels).	Acres. For Green Food or Hay.	Acres. For Grain.	Estimated Gross Produce (in bushels).	Acres.	Estimated Gross Produce (in bushels).	Acres.	Estimated Gross Produce (in tons).
AUCKLAND	1888	6,197	1,462	462	8,121	23,721	9,860	287,382	14,239	7,480	225,986	461	15,654	4,762	22,016
	1887	5,907	1,330	533	7,770	27,904	4,975	133,120	14,422	5,823	168,746	596	12,683	4,864	14,752
TARANAKI	1888	1,389	625	249	2,263	1,020	2,082	60,748	750	2,628	86,363	248	9,178	874	4,995
	1887	1,291	539	246	2,076	1,126	1,602	39,492	556	2,741	84,912	230	6,911	863	3,169

Provincial Districts.		In Turnips or Rape.	In other Crops.	Total Number of Acres under Crop, exclusive of Land under Grasses.	In Sown Grasses.				Grass Seeds, Produce of.		Quantity of Last Year's Crop remaining on hand when Form was filled up.		
					In Hay.		In Grasses after having been broken up (including such as in Hay).	Grass-sown Lands not previously ploughed (including such as in Hay).	Cocksfoot.	Ryegrass.	Wheat (bushels).	Oats (bushels).	Barley (bushels).
		Acres.	Acres.		Acres.	Estimated Gross Produce (in tons).	Acres.	Acres.	Bushels.	Bushels.			
AUCKLAND	1888	14,451	7,200	58,473	16,388	21,428	307,715	500,147	22,443	117,885	472	978	..
	1887	12,224	5,776	48,680	14,346	17,951	308,225	470,020	15,764	92,943	74	1,651	70
TARANAKI	1888	3,796	669	11,047	3,550	5,470	64,295	175,243	83,573	9,650	3,559	2,875	86
	1887	3,821	489	10,302	3,451	5,054	64,837	155,347	43,763	23,784	..	3,049	..

northern and eastern slopes of Mount Egmont, is a district covered more or less with heavy bush or forest, and much cut up with gullies and water channels. Here the land—though a good deal of it is by no means ill-adapted for pasture—is of decidedly inferior quality to the last-named, and the access by roads which, for half the year, are little better than mud-tracks, are great hindrances to settlements on advantageous terms. The price of unimproved bushland hereabouts varies from 20s. to 40s. an acre, freehold. A considerable portion of it, however, is Crown land, either leased at a rental of from 1s. to 2s. an acre, with a purchasing clause, or on the principle of deferred payment by which the occupier becomes, at 2s. an acre rental, in the course of ten years, owner of the farm. The cost of an improved bush farm is from £3 to £6 per acre. Some bush farmers—chiefly, however, those of the older generation, who did not fear hard work and hard living, and who settled in the district in days when the price of produce was, on the average, at least double the present—have done extremely well for themselves and their families. But, I fear, a very considerable proportion of the bush farmers of the present time are in anything but flourishing circumstances, partly from extravagant habits, partly from lack of practical skill in any but the roughest pioneering work, but chiefly from having had to heavily mortgage their property at the high interest of 8 to 10 per cent, even in many instances borrowing money at 10 and 12 per cent on bills of sale over their stock, product, and implements; but, above all, the enormous fall in agricultural values of every sort, during the last few years. The size of the bush farms in Taranaki varies from fifty or sixty to four or five hundred acres, occasionally as many as a thousand. The chief wealth of the bush farmer—if wealth it can be called—consists in his milk cows, heifers, calves, and steers, to which sheep in considerably increasing numbers may be now added, besides horses, with the inevitable pigs and poultry. The life is hard and rough enough, but there is also about it a delightful freedom and independence, unknown, I fancy, to most small farmers in England, together with the reasonable prospect, with ordinary industry and prudence, of making a fair competence for the children, of whom the more a man has about him the better, the price of hired labour being prohibitive to all but capitalists.

On page 177 are the latest government agricultural statistics for Taranaki Province, on some figures of which, however, I have reason to entertain doubt as to their strict accuracy, knowing the difficulties attending their compilation in more ways than one. The statistics are as recent as February of this year.

In the provinces there were, at the same date, horses, 8,514; mules, 3; cattle of all description, 79,848; sheep, 132,270; goats, 84; pigs, 15,284; poultry, 62,091. To which I may add, from my own knowledge, donkeys, 1. There is a tradition, indeed, of there having once been 2.

The existing prices of cattle and produce in Taranaki I give chiefly from my own knowledge; partly, also, from the market returns in the local papers, *The Budget* and *Taranaki Herald*, of October 27th, the latest issue, as I write this paper.

	£	s.	d.		£	s.	d.
Draught Horses	10	0	0	to	12	0	0
Hacks	2	0	0	„	8	0	0
Calves	0	5	0	„	0	16	0
Yearlings (mixed)	0	12	0	„	1	1	0
18 months to 2 years' old Steers	1	5	0	„	1	15	0
Heifers	1	15	0	„	3	2	6
Cows	2	5	0	„	4	10	0
Big Steers	2	17	6	„	3	5	0
Sheep, now in wool	0	10	0	„	0	12	0
Lambing Ewes	0	8	0	„	0	10	0
Ducks	0	1	6	„	0	2	0
Fowls (ordinary)	0	1	0	„	0	1	6

PRODUCE.

Butter, best, fresh	6d. to 1s. 2d.
Kegged Butter, chiefly for export	8d. „ 1s. 4d.
Milk	3d. to 4d. per quart, if near a town.
Eggs	6d. to 1s. 6d. per dozen, do.
Bacon and Hams	5d. to 7d. per lb.
Cheese	4d. „ 6d. „
Honey	4d. „ 6d. „
Potatoes	3s. to 4s. per cwt.
Carrots	£1 to £1 5s. per ton.
Grass Seed, according to description	3½d. to 1s. 3d. per lb.
Edible Fungus	3d. „
Oats	2s. to 3s. per bushel.
Wheat	3s. to 3s. 6d. „
Indian Corn	3s. to 3s. 6d. „
Firewood	16s. to 18s. per cord.

The actual price to the producer is, however, often lower than the above, owing, n chief measure, to the long distance from market, the scarcity of local consumers, the long credit and barter system, and other causes.

The principal colonial market for Taranaki cattle, sheep, and produce, is Auckland, to which the sole access is by sea from the other provinces, Taranaki included. The main trunk line of railway to connect Auckland with the towns in Wellington and Taranaki Provinces, so long projected, is, partly from the enormous cost, partly from the nature of the intervening country and the native difficulty—but more than all from discreditable political intrigues, too common in the colony—a project only, in spite of the expenditure, or rather waste of an immense sum of money, on preliminary expenses and less innocent objects. Wellington likewise takes a considerable and yearly increasing amount of Taranaki produce, especially butter. Here, again, the heavy freight and length of time consumed on the railway transit are serious obstacles, the former being no less than £3 a ton for butter, the latter occupying by the bi-weekly "express train" fifteen hours in running the distance of 260 miles from New Plymouth to the Capital. Much of this and other perishable produce is, however, conveyed by sea, with hardly more satisfactory results to the producer. Of late a good deal of business has been transacted in butter with the home market, Wellington being the port of export.

Already, with the prospect of a large increase in the home trade, dairy factories, worked chiefly by water power, but some by steam, are springing up over Taranaki. The enterprise, though yet in its infancy, appears likely to meet with very fair success, although there are still serious difficulties to surmount. The Sydney market, so far, has been the principal extra colonial market for butter, but the cost and risk of carriage are considerable, and the consumption extremely variable. From time to time a good wholesome drought in New South Wales—especially one lasting a year or more—makes Sydney a really profitable customer. With Melbourne—where the home dairy produce is scarce and dear, besides being of an inferior sort—there is no communication, except the tedious and circuitous route round the South Island *viâ* Dunedin, and the Bluff or Foveaux Strait. Thus owing to this cause and the high protective duties, commerce between that large and prosperous city and Taranaki is absolutely nil. The following are the latest shipping returns for the two ports of Taranaki, New Plymouth, and Waitara. At New Plymouth harbour, annual tonnage during the year 1887, 98,965; at Waitara, 24,089. Value of imports at New Plymouth (exclusive necessarily of coastal trade not entered at Customs), during the same year, £12,571; exports £2,536. The largest trade by far, be it understood, being coastal, is not valued here.

The capital of the Province, New Plymouth, containing rather more than 3,000 inhabitants, is healthily and beautifully situated on the seacoast, a few miles north-east of Cape Egmont. The main streets are wide and well paved, and lighted with gas. The town is likewise supplied with water, laid on from the neighbouring Waiwokaiho River. The houses in the suburbs, nearly all of one storey, are very pretty, surrounded by verandas, and standing in tasteful gardens. A town of 3,000 inhabitants can hardly be said to be badly supplied with the good things of this life when, in addition to the above luxuries, it possesses no fewer than six churches of different denominations, a prison and police station, courthouse, four banks, eight hotels—two with a comfort and elegance I have never seen equalled at home in much larger towns—between thirty and forty shops or stores of every description, three primary schools, the principal containing some 500 children, a high school, and free reading-rooms, &c., &c. The second town of importance in the Province, Waitara, situated about a mile from the mouth of the river of that name, and connected with New Plymouth by road and rail, is distant from the latter town ten miles, in a direct line. It contains a population of about 600. Other so-called townships are Inglewood, Stratford, and Normanby in the forest, and on the line of railway to Wellington; Hawera about 700, and Opunake already mentioned. In addition to these are such smaller settlements as Urenui, Omata, and Okato, dotted along the coast. The town of Patea, on the other side, and Hawera, on the Patea River, must not be omitted from the list, though in a declining state, and almost deserted. Except New Plymouth, these Taranaki towns present a somewhat forlorn, not to say dismal, and deserted aspect. It is in the country districts that colonial life shows at its best and healthiest, Taranaki being no exception to the general rule. The atmosphere, physical and moral, of colonial towns is, as a rule, the reverse of sanitary to the new chum—especially if young and innocent—too often deadly, should he frequent it long. The vast area of back country between the line of railway skirting Mount Egmont and the foot of Ruapetua, sixty miles of almost unbroken forest, is being slowly opened up. The greater part is unknown save to the Maories and to a surveyor or two. I hope, however, before long, to be able to send the Society some information respecting it.

Ancient Portuguese Navigators and the North-East and North-West Passages between Europe and Asia and America. By J. Batalha-Reis, F.R.G.S.—When Professor Nordenskjold made his celebrated voyage along the northern coast of Europe he was greeted as being the first to have linked Europe with Asia by that channel. Latterly the voyage of Captain Wiggins and Mr. Sulivan (of Newcastle) through the Straits of Kara to the mouth of the River Yenesei have given occasion for a revival, principally in the North of England, of the interest in this geographical question. Publications now little read, however, prove: (1) That in 1555 Martin Chacke (Martin Chaco ?), a Portuguese, on board a vessel on the coasts of Asia, navigating in company with other vessels, was separated from these by strong westerly winds, and, proceeding north and east, through numerous islands, came, by a strait in 59° N. lat., to Newfoundland, and thence to the north-west coast of Ireland, and on to Lisbon, where he arrived four or five weeks before the vessels from which he had become separated in Asia. This Martin Chacke, or Chaco, wrote and published the narration of his voyage. (2) That in 1660 the Portuguese Melgueiro sailed from Japan, in the month of March, in a northerly direction; running along the coast of Europe westwards, he reached 84° N. lat., passing successively between Spitzbergen and Greenland, and, travelling south, along the west coasts of Scotland and Ireland, arrived finally in the Tagus. Documents of both these journeys are to be met with in *Purchas, his Pilgrims, &c.*, London, 1625, 4 vols.; Pierre Bergeron, *Traité des Tartares, &c.*, Paris, 1634, 1 vol.; P. Buache, *Considérations Géographiques et Physiques sur les nouvelles découvertes au nord de la Grande Mer*, Paris, 1753, 1 vol.—*British Association Report*, 1889.

INDIAN RAILWAYS AND BRITISH TRADE.

(See Map.)

By MR. HOLT S. HALLETT, C.E., &c.

[Delivered April 5th, 1889, at 8 p.m., in the Boardroom of the Manchester and Salford Bank in York Street, Manchester, the meeting called jointly by the Manchester Chamber of Commerce, the United Cotton Spinners' Association, and the Manchester Geographical Society. Mr. Henry Lee (president of the Chamber of Commerce, and vice-president of the Manchester Geographical Society), in the chair.]

Mr. HOLT S. HALLETT, before commencing his address, pointed out on two large maps the direction of our present system of railways in India. He then said: In the final report of the Royal Commission on trade depression, issued in January, 1887, we were told that the increasing severity of foreign competition is a matter deserving more serious attention at the hands of our commercial and industrial classes; that our supremacy is now being assailed on all sides by rival manufacturing nations; that over-production has been one of the prominent features of the course of trade of recent years; and that it is obvious, in order further to extend our commerce, we must display greater activity in the search for new markets. Considering that production in England increased at the rate of only 1¼ per cent per annum between 1870-85, or by considerably less than half the rate of the previous twenty years, whilst the population of our manufacturing districts was increasing more rapidly than in the earlier period, owing to the great influx of displaced agriculturists—remembering that the population of Lancashire has for years been increasing five times as fast as its operatives, and that over-production means but the deficiency of customers for our goods—it is surprising to me that the merchants, manufacturers, and operatives of this county have not yet fully awakened to the importance of developing their trade by all means in their power with the cotton-clad people of Southern Asia, particularly with the inhabitants of India and China, who together comprise fully one-half of the population of the world.

It cannot be satisfactory to the people of Lancashire to know that they are being left behind in the race for the commerce of the world; that between 1877 and 1887 the consumption of raw cotton in Great Britain only increased 17 per cent, while that on the Continent increased 50 per cent, and the United States 71 per cent. The consumption of raw cotton on the Continent in 1887 was running neck to neck with that of Great Britain. Since 1881, my friend Mr. Colquhoun and I have been striving our utmost to interest the people at home in the great and yet undeveloped markets of the East. We have tried to impress upon our Government and the mercantile and manufacturing community that we are in possession of certain advantages which render us the envy of competing nations. We are the possessors of India, and as such are the next-door neighbours to the land-locked half of the great and populous empire of China. We have tried to awaken an intelligent interest in the subject of the importance of connecting India with China by a railway; and by exploration have proved to the satisfaction of everyone who has studied the question that a practicable route between these two great empires exists, and that along that route a railway can be constructed at a reasonable cost, which would tend greatly to enhance the commerce of Great Britain and India with its Eastern neighbours, Siam and its Shan States and the western half of China. When this railway is constructed, its inland terminus at Ssumao would assuredly form the nucleus of a system of Chinese railways, which would spread through the country in various directions, and eventually a branch would certainly be made to join our terminus at Ssumao with Patkoi, the southern treaty port in the China Sea, and thus complete a through line from the Persian Gulf to the China Sea by a railway extending solely through British, Siamese, and Chinese territory. This line would pass through the richest parts of Asia, foil the designs of the French, who are hoping to oust our trade from Southern China and Central Indo-China, and give us vast markets for the future expansion of British and British-Indian commerce. This chamber has more than once recorded its opinion in favour of this railway. I therefore merely mention it in order to call your attention to the fact that the Government of India is still according it its cold shoulder. In looking over an article on "The Growth of the Cotton Trade," which appeared in 1887 in the *Journal of the Manchester Geographical Society*, I came upon the following statement: "The Board of Trade Returns show that the export of cloth in 1886 exceeded that of 1881 to the extent of 73 million yards, but during this time the exports to India increased 479 million yards, showing an actual decrease to other parts of the world to the amount of 406 million yards. This shows very clearly our great dependence upon India as a customer for our cotton manufactures." Between the end of March, 1877-87, the import of your piece-goods into India increased from 1,186,418,810 yards to 2,155,713,385 yards, or by 82 per cent. If it had not been for the increase of your export to India, China, and Japan, in these ten years your export of cotton piece-goods would not only have shown no increase but a very serious decrease. The more one examines into the present state of the demand for British manufactures the more clearly does it become evident that we are growing, with ever-increasing rapidity, more and more dependent upon the great markets of the East. In the last two years I notice in the Board of Trade Returns that our export of piece-goods to Germany has decreased from 45¾ million yards to less than 31 million yards; to Italy from 85 million yards to 46 million yards; and to the whole of the Continent by 10 per cent. Our piece-goods trade with the Continent of Europe promises soon to become extinct. Looking at North America our prospects are even more gloomy. Between the end of 1886 and the close of 1888 our export to the United States decreased 32 per cent, and our export to British North America by over 21 per cent. With these facts staring you in the face, and with the knowledge of the great loss that your trade has suffered through the recent impoverishment of the classes who are dependent upon agriculture for subsistence, I do earnestly hope that the importance of further extending your trade in India and the western half of China, by the extension of the Indian railway system, will be so impressed upon your minds that you will for the future make that extension the chief plank in your political platform. It it a question of bread and butter for the people of Lancashire; it is a question in which is bound up the decrease or the increase of your manufacturing industries, the future employment or destitution of your operatives. India is our largest customer. India takes 14 per cent of the gross exports of the United Kingdom and 35 per cent of your cotton piece-goods. Our export of cotton goods to India is valued at 22½ million sterling. Between 1877 and 1887 the foreign imports of India increased nearly 66 per cent and 80 per cent of those imports came from the United Kingdom. In the same period the railways of India increased from 7,322¼ miles to 14,383 miles, or by 96½ per cent; and it is this increase to the railway system that beyond doubt enables the people of India to consume their share of the increased out-turn of the Indian cotton mills and take besides 82 per cent more of our cotton piece-goods than was received by them in 1877. As the increase of the Indian railway system by 7,000 miles has been the chief factor in causing an increased demand for your piece-goods to the extent of 969,294,575 yards or, to speak roughly, a thousand million yards, you may feel assured that a further extension of the Indian railways to double their present mileage would enable India to consume four thousand million yards of your piece-goods, an amount equal to four-fifths of the present gross export of those goods from this kingdom. There should be no talk of over-production in England whilst we have this great future market in our possession, only waiting for our exploiting by means of railways to double and treble and quadruple the exports from this country.

Nothing is more delusive than an atlas in which the maps are drawn to different scales, and England and Wales looks as large as our Indian dominions, and the railway system of one country appears to be as large as that of the other. India is twenty-seven times the size of England and Wales, and thirteen times that of the United Kingdom. It contains over 270 million inhabitants, most of whom, at the present time, are as much cut off from railway communication as when there was not a mile of railway in the country. Railways in India are in their infancy. If India were as well supplied with railways as England is, it would have 365,000 miles, instead of the paltry 15,000 miles it now has. If the Indian Government continues the construction of railways at the same rate that it has been doing during the last thirty years, it will take more than 900 years to give it, for its area, the equivalent mileage of England.

Taking Sir Juland Danver's figures, given at his late address to the Society of Arts, we find that there are now no more than 14,890 miles of railway open in our enormous Indian Empire; that the 6,948 miles open in January, 1877, had taken twenty-seven years to construct, and that the remaining 7,952 miles had been constructed in twelve years. The estimated amount expended on the open lines had been up to date 187,226,000 rupee pounds, or tens of rupees, making the average cost per mile 12,000 rupee pounds. The railways constructed up to 1877 cost on an average 15,740 rupee pounds a mile, or, as the exchange had up till then been nearly at par, about £15,000 sterling; the railways built since that date have averaged 10,320 rupee pounds a mile, which, allowing one-sixth for the average deduction on account of fall in exchange, would be equivalent to about £8,600 sterling a mile, or about 48 per cent less than the railways constructed in the earlier period. Metre gauge railways can now be constructed under ordinary circumstances at about £4,500 a mile, or at less than one-third the cost of the early broad-gauge railways, and have therefore a very fair prospect of earning large dividends, and, if constructed from borrowed money, proving highly remunerative to the Government of India.

These figures show how much more rapidly and cheaply railways are now made than in the early days of construction. The reason is plain. We were buying experience during the operations of the first twenty years, and for a long time the expense and difficulty of moving materials to their destination was enormous. The Mutiny also intervened, and caused delay and destruction. The greater portion of the above-mentioned addition was also metre-gauge lines, which have no doubt cost much less to construct. Materials likewise sent out from England were very much dearer than they have been recently, and the cost of freight was higher. The substitution of steel for iron has in many ways aided economy. Steel rails are now supplied under £4 per ton, while as much as £13 7s. has been paid for iron rails, and £8 to £9 was a common price. A steel sleeper is also used and found very serviceable. Locomotive engines also are now obtainable at a lower price than was formerly given for an engine of much less size and power. The three railways which were first undertaken have cost upwards of £20,000 per mile, but it should be borne in mind that they are on the 5ft. 6in. gauge, and that a considerable portion is laid with a double line of rails. I allude to the East Indian, which cost Rs.231,719 per mile; to the Great Indian Peninsula, which has cost Rs.204,493; and to the Bombay and Baroda, which has cost Rs.206,668; or the Oudh and Rohilcund, another broad-gauge line, which was commenced some time after these, and was only finished last year, cost only Rs.128,595, although it includes in its system several large bridges, among them the Dufferin Bridge at Benares. The Midland and the Bengal-Nagpur Railways, also of the 5ft. 6in.

gauge, now in course of construction, are expected to cost about Rs.120,000 per mile. The first metre-gauge line, completed in 1877, was the Rajpootana-Malwa, and that has cost Rs.69,066 per mile. The South Indian came to Rs.69,066; the South Mahratta to Rs.80,125; the Burmah to Rs.80,290; the Tirhoot to Rs.70,333. The Bengal and North-West has been constructed at the rate of Rs.60,235 per mile, while some provincial lines, also on the metre-gauge, in Oude and Rohilcund, have been made for Rs.41,964 and Rs.33,207, and in the Guicowar's territory they have cost Rs.22,823 and Rs.28,415 respectively, without rolling-stock. Under very favourable circumstances the cost has, in some districts, been reduced to Rs.18,436 and Rs.16,272. Instances of these occur in the Native States of Jodhpore and Morvi, in the latter of which, however, the gauge is 2ft. 6in.

The direct financial results of making the railways are given by Sir Juland Danvers as follows, the amounts being given in tens of rupees, or rupee pounds: "In 1875, on an expenditure of £105,790,929, 6,497 miles earned a net revenue of £3,647,868, and yielded a dividend of £3 8s. 9d. per cent. In 1885 a sum of £9,126,331 was earned by 12,280 miles, which had cost £161,917,840, giving a dividend of £5 12s. 10d. per cent. In 1887, 14,383 miles were open. The capital expenditure was £182,879,655, and the revenue realised £9,364,821, yielding a return at the rate of £5 2s. 5d. per cent. These results, it will be understood, were produced from lines many of which had been at work for only a few years, some had only just been opened, and a considerable proportion were made for strategic and famine purposes. A portion of the capital on which the average dividend is calculated represents also unfinished and unopened lines, which necessarily are dead weight on the whole. Some lines, of course, earned higher than the average rate. The East Indian, for example, yielded £8·75 per cent; the Great Indian Peninsula, £8·06; the Bombay and Baroda, £7·80; and the Rajpootana-Malwa, £6·56 per cent. Taking the whole system, and classifying it according to its earnings, 6,368 miles yielded £7,544,066, and earned more than 5 per cent; 347 miles yielded £101,445, and earned more than 4 per cent; 2,039 miles yielded £635,836, and earned more than 3 per cent; 5,305 miles yielded £182,674, and earned under 3 per cent. Of the 14,528 miles completed, 3,936½ have been open twenty years, 3,385¾ ten years, 2,823¼ five years, 4,382½ less than five years."

To account for 5,305 miles of railway in India earning less than 3 per cent, the interest at which the Government of India can now borrow money at par for the construction of railways, we must remember that 4,382½ miles of railway have been opened less than five years, and are therefore expected to be, taken together, earning less than half of a full dividend. Then the famine and strategic lines constructed since 1884 were not expected to be fully remunerative, and were constructed as an insurance against war and famine, and should not be entered by the Government in their account amongst the railways that are expected to prove remunerative. Then the strategic lines, 870 miles in length, recently constructed on the North-western frontier, cost £11,000,000, and were not expected to earn even sufficient to cover their maintenance expenses. Again, the capital expenditure upon the 2,487 miles in course of construction was not earning interest, and naturally diminished the earnings on the opened sections. Taking the matters into consideration, I maintain that the railways recently constructed, which when made were not expected to earn a full dividend, as well as those that have been opened for more than ten years, show such remunerative results that the Government should feel encouraged, even for the sake of the direct returns that are promised, to push forward railway construction in India until the whole of the country is fully developed. But the hope of such a sensible and statesmanlike policy being undertaken whilst the Secretary of State for India is controlled by the paralysing influence of the Council is to expect too much. Sir Juland Danvers, acting as their mouthpiece, had to state at the meeting of the Society of Arts, that "Progress in all directions has been considerable, but there is no cause for boasting. More railways are required, and it is hoped that private enterprise will step in and provide what is wanted. Government has done much, but the taxes of the country cannot stand a larger demand upon them than they at present bear; and except for purposes of defence and protection against famine, the Imperial Government will probably hold its hand, and limit its encouragement to the grant of every possible facility, short of pecuniary aid, to private enterprise." The plea of the poverty of the natives of India is the old, old plea of the Council of the Secretary of State for India—it is a plea that is entirely groundless, and, if listened to, will leave the greater part of our Indian Empire in as backward a condition as it is in at present—a far more backward condition than our country was in when there was not a mile of canal or railway in the land. To show you where the obstruction to the progress of the railway system in India, and with it the progress of the prosperity of the people of the country lies, I will quote from the evidence of General Richard Strachey, given before the Select Committee on Indian Railways, which sat in 1884. He stated that "From the time that the Government of India began to borrow money for the purpose of railway enterprise in India (which goes back to about 1870), to the time of Lord Lawrence, or just after he left the Governor-Generalship, the Indian Office has acted—I do not say this at all as intending to throw blame on the Indian Office—as a restraining power. Its influence has been in the direction of moderating the disposition to expend. It is very natural that it should be so. The Government of India saw more of what the emergency and the inducement to make railways was. The Secretary of State, on the other hand, saw the risks that arose from excessive expenditure. This repressive action continued, becoming gradually, from my point of view, more severe, as I daresay the disposition of the Government of India to spend more money became more active until 1879. In 1879 a Committee of the last Parliament sat upon the subject, and they, no doubt, under the influences of the period in which the Committee sat, emphasised the necessity of putting restrictions upon the expenditure. The Secretary of State accepted these restrictions, and applied them in what I should call even a harsher way than the Committee had indicated or intended, and the final culmination of this policy of restriction is indicated by a despatch from Lord Hartington, in January, 1881, which emphasises the former orders, and adds additional restrictions and additional limitations to the power of spending money on these objects." The Committee that sat in 1884 made matters far worse for the paying prospects of the railway system in India by stopping the expenditure upon all railways that were likely to prove remunerative to the investing public by backing up the Government in its refusal to construct them, or to grant such concessions to syndicates as would enable them to put these railways at par upon the market. Without such concessions are given, or the Government decides to construct the lines, it is in the uttermost degree improbable that a single one of these railways will be built. Colonel Conway-Gordon, the Director-General of Indian Railways, in his evidence before the Committee of 1884, stated that: "The whole history of Indian railways is one long and unsuccessful attempt to get railways constructed without a State guarantee." The Committee of 1884, notwithstanding this evidence of the Director. General of Railways, determined to continue the block, and in their report they remark that "The proposed policy of the Government of India is to leave to private enterprise those lines which are commercially most attractive, and to construct, either directly by the State or indirectly through the agency of companies, those which are, relatively speaking, unprofitable, but which they consider to be indispensable for protection against famine, or for other urgent purposes. With this object the Government of India have sketched a programme of the railways with which, in their opinion, it is desirable that India should sooner or later be provided. These lines have been arranged into two schedules, A and B. Schedule B contains 34 lines, with a total length of 3,432½ miles, of which the cost is estimated at £24,288,000. These railways are all considered likely to be remunerative, and they are left to be taken up by private companies, without any aid from the Government except the grant of land free of cost. The immediate construction of these lines is not contemplated by the Government of India. We may, therefore, for the purpose of this inquiry, dismiss all consideration of them. Schedule A contains 30 projects, many of which are already under construction, the length requiring still to be made being 3,896 miles, and the cost being estimated at £28,262,450; or after allowing for the repayment of £630,000 by a company, £27,832,450. These railways are all said to be indispensable for protective or other urgent purposes. It is intended that £13,444,000 shall be borrowed by the Government, £2,100,000 by construction and working companies—that is, companies receiving a low permanent guarantee of interest—to make a line on behalf of the State, and £12,040,000 by companies working on their own account, with a guarantee of advances of interest for a limited term of years, repayable from surplus profits. The remaining £48,450 will be supplied from the provincial balances."

If you will look at the railway map of India, and remember that that country, including Burmah, contains an area of 1,570,000 square miles, or twenty-seven times the area of England and Wales, or thirteen times the area of the United Kingdom, that it is peopled by upwards of 270 million souls, a population more than seven times as large as that in our isles—and that it does not contain on an average one mile of railway for each hundred square miles of country—you may gain some idea of the backward condition of our Indian Empire. But even this gives you but a faint idea of the want of railway communication within four-fifths of the country. To grasp this you must look at the map and notice that one-half of the railway mileage in India is contained in the strip of country to the south of the Himalayas, 1,200 miles in length and 200 miles in breadth, which stretches from the mouth of the Ganges to Jhelum, containing an area of only 240,000 square miles; and that a fourth of the gross mileage is contained in the triangle lying to the south of a line drawn from Bombay to the mouth of the Godavery, which contains an area of about 200,000 square miles. The remaining area, containing 72 per cent of the gross area of India, has barely 4,000 miles of railway in it, or an average of one mile of railway to every 282 square miles of country, and this after railway construction has been carried on in the country for about 40 years. Sir Juland Danvers is certainly right when he states that the Government of India has no cause for boasting because it has constructed 14,890 miles in India during the course of 40 years. The American people opened 13,080 miles in the year 1887, and at the end of 1888 had 146,000 miles of railway to serve a population numbering about one-fifth of that of our great Indian Empire. In comparison with the populations, America is fifty times better off for railway communication than our much neglected Eastern Empire. If you will compare the map of India showing the lines in Schedules A and B which were issued with the report of the Select Committee on the East Indian Railways, with the map in the last Administration Report on Indian Railways, you will see what a great blank there is still in the completion, and even in the commencement, of lines included in Schedule A, some of these lines having been put aside to find funds for the construction of strategic railways. As to Schedule B, hardly a single line has been touched, and not a single line has been taken up on the terms which were settled by the Committee of 1884.

It is true that the Indian Council is supposed to be still squabbling with certain syndicates who have offered, if certain concessions are granted to them, to construct the Bengal-Assam Railway, which is to connect Chittagong, one of the finest seaports in India, with Makum in Upper Assam. This railway would open up the tea districts, and many great fertile and unoccupied plains, and tap the magnificent coal and petroleum fields in Upper Assam. It forms part of the connection by railway of India with Burmah, which I and my friend, Mr. Colquhoun, have urged for several years upon the notice of the Government, and is beyond doubt the most important line yet unconstructed in our Indian Empire. This section of the line, with its branches, is 742 miles in length, and is estimated to cost, at the present rate of exchange, £6,038 sterling a mile. Chittagong, and certain of the Burmese seaports, have been to this day the most neglected of our deep-water and good-sheltered anchorage seaports in India. None of them except Rangoon have a single mile of railway leading from the port inland, and trade with the interior, except for a few miles from the ports remains undeveloped. Many years ago I proposed a line of railway from our Burmese seaport Bassein to Henzadah, which would pass through a great landlocked rice-field for the whole distance, and could be constructed at a small cost. The line has been surveyed and estimated for and put on the shelf to be shown to any syndicate who wishes to inspect it any time during the next hundred years or so. Another line suggested by me many years ago was for the connection of the Rangoon and Mandalay railway with our Burmese seaport of Maulmain by railway. This line would develop a vast area of fertile country, and would form a link in our proposed through communication to China. This, too, has been pigeon-holed. Then consider the present state of Upper Burmah and its Shan States. In referring to it, Lord Dufferin said: "The construction of railways from one end of that province to the other is not only required for preserving peace among our new subjects, but it is also necessary to enable the province to assume that position of financial equilibrium which can only be brought about by the natural development of its resources." And in his farewell speech, when leaving Calcutta last year, he declared, referring to Upper Burmah, that "The more we know about the country the more extensive and the richer seem to be its resources, and the more certain it is that in the course of some years it will become an even more prolific contributor to the Indian Exchequer than Lower Burmah. In any event, the verdict of history, I am sure, will pronounce that by establishing in that unfortunate country, order, security, peace and justice, in the place of anarchy, rapine, torture, and murder, and by replacing the late king's helpless and hopeless administration by the temperate and benign rule of Queen Victoria, we have reached a consummation as beneficent as it was unavoidable." We have been in possession of Upper Burmah since November, 1885, and only one single line of railway, only 220 miles in length, has as yet been constructed in that vast province, which, with its Shan States, contains 188,000 square miles, an area more than three times as great as that of England and Wales. Not another mile of railway is yet in hand, although it is acknowledged on all hands that railways are urgently needed for pacifying, for governing, and for developing the country, and for reducing the present great police and military expenditure. Burmah is one of the few districts in India where the growth of the Government land revenue is not restricted by a permanent settlement or by long leases. Railways in Burmah, besides paying a large dividend, bring large indirect receipts from increased land revenue to the Government, which must make their construction highly remunerative to the Government. In 1877-8 the land revenue of Burmah amounted to 7,856,490 rupees; in 1886-7 it had increased to 14,477,850 rupees, or nearly doubled; and the gross revenue of the country during the same period increased from 17,617,850 rupees to 24,335,270 rupees. The whole of this vast increase in the revenue of Burmah, with the exception of less than 4 per cent, accrued in the land revenue. This increase in the land revenue, caused partly by railways, would pay 23½ per cent upon the gross cost of the railways at present opened in Burmah, which in 1887 gave net earnings equal to 5·55 per cent on their net capital outlay. In the Budget Estimate for Burmah for 1888-89 the gross income of the railways in Lower Burmah is put down at 84 lakhs of rupees; the working expenses at 18 lakhs, and the interest on the debt incurred for the capital outlay at a little over 11½ lakhs of rupees. This leaves a net profit of nearly 4½ lakhs from 327 miles of open railway. Assuming that only one-half the increase to the land revenue has been caused from the construction of railways, these Burmese railways are returning to the Government upwards of 16 per cent upon their capital outlay.

No greater blunder could be perpetrated than to fail in greatly and rapidly increasing the railways in that country. Only one-sixth of the culturable land in Lower Burmah has yet been taken up for cultivation, and perhaps one-twentieth of that in the Upper Province! What a mine for future revenue lies as yet unworked in these two provinces. If Burmah was properly opened out by railways, and population was thus induced to settle in the country, its land revenue in time would exceed the present gross land revenue of the whole of India. Here is a country, the richest in natural wealth of the whole of our Eastern possessions; here is a country where railways are paying better than anywhere else in the world; here is a country whose trade, revenue, and prosperity are truly increasing, and have for years been increasing by leaps and bounds; here is a country inhabited by a people who take seven or eight times as much of our merchandise as is taken by a similar number in the rest of our Indian possessions; here is a country that would double and treble its imports if it was further opened up by railways; here is a country, the neighbour of China, the Shan States and Siam, whose commerce would grow to vast proportions if these countries were connected with it by railway; and here is a country that the Government of India has done next to nothing to develope. Every Chief Commissioner who has been in the country has done his utmost to impress the Government with the importance of further opening up this prosperous and promising country by means of railways. The present Chief Commissioner, Sir Charles Crosthwaite, is earnestly entreating the Government of India to insist upon having the Burmese lines connected with the Indian system of railways by the construction of a line up the Moo Valley from Sagaing to Mogoung, to be afterwards continued to join the Chittagong-Assam Railway at Makum. For years past the Chief Commissioners have pressed upon the Government the advisability of connecting Henzadah with Bassein; and Toungoo and Rangoon with Maulmain or Martaban by railway. These are only a few of the lines, which would certainly be remunerative, that are urgently required for the development of Burmah. Lower Burmah had to wait until 1877 before its first line, the Rangoon and Prome Railway, was opened to through traffic, and no less than eight years were allowed to elapse before its next, and last, line—that from Rangoon to Toungoo—was completed. In that province at present there are but 327 miles of railway, and not a single mile has been built, or even commenced, since July, 1885, when the Toungoo Railway was opened to traffic. This neglect of our interests, this neglect of the means for expanding the revenues of India, this neglect of the urgent needs of Burmah, which has for years been the Cinderella of our Indian Empire, must have occurred through sheer heedlessness on the part of the Council of the Secretary of State.

Next to Chittagong and the Burmese seaports, Kurrachee is the seaport that has been most neglected by the Government of India. This port, which lies about 400 miles nearer England than Bombay does, has been long complaining that it has been cut off from the traffic of the upper and central portions of the valley of the Ganges, because a short line has not been made to join the Indus Valley Railway, at Hyderabad, with the great system of railways lying to the east of it at Pach Bodra. There is no need for asking where railways should be built in India. The Government archives are crammed full of estimates for various projects which have been approved, but not sanctioned; and where estimates have not yet been made, as in Upper Burmah, it is well known in which direction railways are most required for developing the resources and trade of the country. We will now consider what the sparse railway system in India has done in improving the condition of the people in the districts that it has tapped. Mr. Bythell, in an admirable paper on Indian railways, published in 1887, in the June number of the Manchester Geographical Society, points out the terrible loss of life that had occurred in the ten great famines that had happened in India during this century, and instanced various districts where the people had been saved from the horrors of famine in consequence of Government and private dealers having been able to pour in stores of grain by railway and road; and I pointed out, in my address lately delivered at Blackburn, that grain could, at the present rate of ½d. per ton per mile, be conveyed for 2,000 miles by railway for a cost considerably less than a third of the cost of the grain at the starting point, whilst the carriage for that distance by carts would add more than four times to the cost of the grain.

Other effects that the railways have, which considerably reduce the effects of a deficient rainfall and the loss of revenue to Government, are the increasing of the wages and earnings of the people, and the giving them the chance of a variety of employment.

In his evidence before the Select Committee on Indian Railways, Mr. Chapman said: "I think that no one who went out to India, as I did in 1849, when there was not a yard of railway in the country, and who sees India under its present condition, can fail to be struck with the absolute revolution that has taken place, mainly, I believe, due to railways. I think that railways have done more than all the acts of the Government put together to infuse greater energy into trade, and the effect upon cultivation has been most marked. With a railway passing through a province it has been most marked. It has brought under cultivation large tracts of country, and I think it is inevitable that it should be so. The railway itself creates a very large number of artificers and others who are now getting comparatively good wages, and in every way, I think, it has infused a degree of 'go' and intelligence into the country which has been most remarkable."

Mr. Glover, one of the largest contractors in India, who had carried out many lines of railways, drew the attention of the committee to the fact that the ordinary rate of wages for a coolie or labourer in the country was 1½ anna, and that wherever a railway was constructed those wages were doubled, and never went down again. A rise in wages amongst a tropical peasantry does not, as a rule, induce more luxurious living, and the family meal remains almost the same, whilst the vessels in which it is cooked and eaten, the house in which it is prepared, and the clothing and ornaments of those who earn it, all show a marked rise in cost and quality, and the people are able to put by part of their earnings for expenditure in times of scarcity, and, by that means, have sufficient to meet their own needs and so reduce the expenditure of the Government during a famine.

In the Appendix to the "Final Report of the Royal Commission on Gold and Silver" is a table showing the average wage of agricultural and skilled labour in certain selected stations in India and Burmah. Excluding Burmah and the seaports, where wages are abnormally high, I find that the average wages ruling in the parts of the country that have been opened up by railways is now 2¾ annas a day, or Rs.59 a year, for common labourers, and 6⅔ annas a day, or Rs.152 a year, for skilled labour. When we remember that in 1882 Mr. Barbour, the Financial Secretary to the Government of India, reckoned that the average wages earned in India was at that time Rs.27 per annum, and that the wages of coolies in districts tapped by railways are now about 2½ times that amount, and that even the children in the factories are getting Rs.36 a year, it is evident what the railways have done, and are doing, in increasing the wealth and comfort of the people, and their power to meet any extra taxes that may have to be at any future time imposed upon them by the Government.

Then considering the enormous effect that the railways have in developing the internal and through commerce of the country, enabling the people to multiply their industries, and find markets for their surplus produce and their hand manufactures; and the great benefit they derive from a cheap and rapid means of transit for themselves and their goods. Even in 1884, when the rates on the railways were much higher than at the present time, and there were less than 11,000 miles of railway open in the country, General Strachey, when asked whether the construction of railways in India had increased the value of land so far as to enable the people to more easily contribute the taxes they have to pay, replied, "Certainly. The relief to the country is immense. The saving to the people of India is probably twice the gross income received by the railway companies. It is a very large sum indeed. It amounts to £30,000,000 or £40,000,000, probably, annually. The cost of transport has certainly been reduced one-third." Does this look like a loss to the poor native of India? In 1886 railways benefited the people of India to the extent of twice the gross receipts of the railway, or to the extent of about 24 per cent upon the capital outlay on the railways. At the same time a dividend of nearly 6 per cent was earned upon their capital. This shows clearly what an utter sham and absurd bogey this cry about the poor native of India being injuriously affected by the construction of railways really is, and yet he is trotted out by the council of the Secretary of State for India time after time to frighten your tender-hearted people of Lancashire into ceasing your clamour for the much-required extension of the railway system of India, upon which the poor native of India would fatten and grow rich, and Lancashire merchants, manufacturers, and operatives would thrive.

We will now turn to the military aspect of railway construction in India. In his paper on Indian Railways, Sir Juland Danvers remarks that "there is scarcely a railway in India which would not, to some extent, contribute towards the security and defence of the country in the event of disturbance or war;" and in another passage he says that "it will not be inopportune here to give a practical example of the value of railways for moving troops. During the military operations in Afghanistan, in 1878-79-80, which was the first time, except for a short period during the Mutiny, that railways in India had been called upon to afford any material assistance during war, a mixed force of 4,000 men were conveyed daily from Delhi to Lahore, a distance of about 350 miles, and of 3,000 men between Lahore and Mooltan, the lines being single. In this manner 336,000 troops, besides 80,702 horses and mules, 9,577 camels, 11,816 bullocks, 414 guns, and 2,749,605 maunds of stores, and 681,653 maunds of railway material were conveyed in the two campaigns." Then, think of the enormous saving there must be to the Government in the cost of moving and relieving troops. Before the railway from Rangoon to Tounghoo was opened, no less than 25 days were taken in relieving the garrison at Tounghoo, at a cost of Rs.49,000; when the line was opened the cost was diminished to Rs.9,400, and the time taken to two days. If this railway had not been opened at the time we annexed Upper Burmah the affair would have been much more costly than it proved to be.

Here is one of the many indirect benefits derived by the Government from railway construction in India. The saving in the general administration of the country, in reducing the number of garrisons, in cheapening postal communication, in reducing the number of highly-paid officials, in the movement of treasure and stores, and in all manner of minor matters, must be put to the credit of the railways that have been constructed. What railways have done in increasing the foreign trade of India was succinctly stated by Sir Juland Danvers in his paper. He said: "The total export and import trade has increased in value from (tens of rupees) Rx92,581,354 in 1874-5, to 155,558,267 in 1887-8. In 1874-5 the imports amounted to Rx36,222,113; in 1887-8 to Rx65,004,612, and the exports to Rx56,359,241 and Rx90,548,655 respectively."

The trade with this country has enlarged considerably, the imports into India from the United Kingdom having been Rx30,200,000 in 1874-5, and Rx57,600,000 in 1887; and the exports Rx27,600,000 and Rx35,000,000. Other countries have probably become alive to the value of direct communication, and do not use England as an entrepot, as they did before the Suez Canal was opened.

India has no reason to be dissatisfied, for the more numerous her markets the better she should be pleased. Her imports from other places in Europe than the United Kingdom in 1874-5 were to the value of Rx715,585. In 1887-8 they were Rx2,540,314. The exports had increased in the same period from Rx7,515,838 to Rx20,314,071. The trade with France has, for example, increased from Rx6,410,737 in 1877-8, to Rx8,058,917 in 1887-8. Imports increased from Rx451,000 to Rx849,000, and exports from Rx5,969,000 to Rx7,209,000. So with Italy, the exports increased in the same period from Rx1,870,000 to Rx4,527,000, and the imports from Rx2,219,000 to Rx4,898,000. With the United States the increase has been in greater proportion. In 1877-8 the exports from India were Rx1,932,000, and in 1887-8 Rx3,782,000, the imports being Rx279,717 and Rx1,030,280 respectively.

The natural advantages of locality, aided by skilled management, have largely increased the exports to China and Japan—and I may add Eastern Africa—of just those descriptions of goods which those countries require. In 1883-4 about 41,000,000lb. of twist were exported to China. In 1887-8 the quantity had increased to 92,500,000lb. Piece-goods in 1883-4 amounted to 1,462,000 yards, and in 1887-8 to 4,300,000.

The increase in the export of some of the most important articles of native manufacture was as follows, comparing 1877 with 1887: Cotton twist, 497 per cent; cotton manufactures, 149 per cent; jute, 126 per cent; silk, 151 per cent; woollen goods, 45 per cent. The total value of exports to China increased in the five years between 1874-5 and 1879-80 from Rx11,648,189 to Rx15,523,678, but in 1887-8 it was reduced to Rx13,092,000.

Trade with Japan increased from Rx3,049,000 in 1883-4 to Rx7,462,000 in 1887. The value of cotton twist and yarn exported to Japan increased from Rx7,821 in 1879 to Rx678,000 in 1887, and gunny bags from Rx7,750 in 1884-5 to Rx21,336 in 1888.

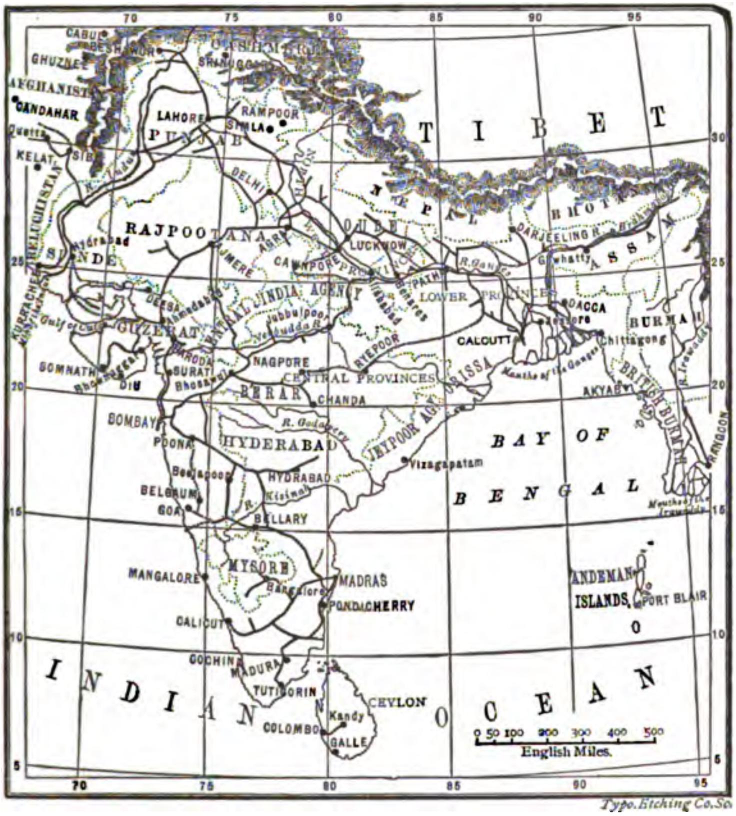
Trade with Australia appears also steadily to have increased. In 1874-5 the exports were valued at Rx135,486. In 1887-8 Rx1,125,025. And yet, with all this activity in other directions than the United Kingdom, the proportion which imports from Great Britain bear to the rest has not, after all, materially changed. In 1874-5 they were, as I have already stated, 83·4 per cent, and in 1887-8, 79·5 per cent of the whole. The value of cotton piece-goods imported from Great Britain was Rx13,697,492 in 1874-5, and Rx22,982,858 in 1887-8. Silk piece-goods increased also from Rx344,672 to Rx717,982.

The trade of India has, I believe, expanded within the last ten years more than that of any other country. This increase to the trade, which has enriched the people and added to their means of livelihood, must have been chiefly due to the development of the resources of the country by the extension of the railway system.

Having explained to you some of the advantages derived by the natives of India, through the construction of railways, I will now weigh the reasons given by Sir Juland Danvers for the do-nothing policy of the Government. These are two. The first is the heavy weight of taxation imposed on the natives of India. The second is that the present taxes cannot stand a greater strain upon them. With regard to the first, I would point out that in his speech on the Debate on the Address last year, Sir Richard Temple, one of the best authorities we have upon India, remarked that "Statistics showed that the natives of India are probably the most lightly-taxed people on the face of the earth, for it has long been our policy to reduce the rate of taxation, limit its incidence, and abolish the imposts which were enacted under native rule. As to the land tax, it mattered little whether it was used as a tax or a rent. According to the most competent administrators and statisticians who had examined the figures closely, it only amounted to between 7 and 10 per cent of the gross produce." With reference to the second plea, I would point out that the Government of India is bent upon killing the goose that lays the golden eggs. When speaking at Ashton-under-Lyne, in 1887, Lord Cross, the present Secretary of State for India, gave it as his opinion that "If it had not been for the railways in India there is no doubt that the Government revenue would have been in a very awkward condition." In 1857, India, with 151 miles of railway, had a revenue of 32 million pounds (rupee pounds); in 1887, with nearly 14,000 miles of railway, its revenue had increased to upwards of £77,000,000, and, according to Sir John Strachey, the growth of the revenue had not been due to an increase of taxation. In 1857 the foreign trade of India amounted to £55,000,000, in 1887 it was £163,000,000. Between 1877 and 1887 the gross revenue of India, excluding railway receipts, increased by £8,130,624. In 1880 the ordinary debt of India was 106,000,000 tens of rupees; by 1887 it had been reduced to 74,000,000 tens of rupees, or in seven years by more than one-fourth.

Knowing that barely one-half of the culturable land in India is now under cultivation—knowing that all available land is seized upon as fast as the railways open it up—knowing that Government, being the owner of the land, is the body most to be benefited by increased cultivation—knowing how the people will not grow more than their local markets require (and the surplus grain often lies rotting on the ground whilst famine is raging in a district a few hundred miles away)—knowing that the population is huddled together in dense masses, simply because the country is not sufficiently opened up to enable them to migrate cheaply to waste lands requiring population—knowing that famine must come some day to this ever-increasing dense population, unless migration occurs in time to avoid it—knowing that most of the world-famed mechanics of India have only local markets for their works of art, that the increase of railways would lead to the more lucrative employment of millions of the people as well as to the further destruction of the bonds in which caste has bound this industrious people and would greatly tend to raise them in the scale of civilisation—knowing that railways would grealy cheapen the price of salt and other articles of consumption to the people, as well as enormously develope the sale of European manufactures and machinery, and thus tend greatly to the welfare of both the people of India and Great Britain—knowing what railways have done for increasing the Government revenues and vastly developing the trade of the country—knowing that the loss of interest to the Government during the last 30 years has been only 37,615,975 tens of rupees, [illegible] less than the indirect benefit derived by the people of

India from them in a single year—and knowing what the extension of the Indian railway system means for our trade—I beg and I pray of you all to interest yourselves in this matter. The wealth and advancement of a State nowadays are commensurate with the extent of its railway system; and the backwardness of a Government is certainly proportional to its neglect in opening out its national resources. India, for the main part, is far away back in the Middle Ages, and promises to remain there if the sentimental railings of pseudo-humanitarians and half-educated Bengali Baboos are still allowed to clog the progress of its railway system. Railways are the most effective missionaries and grandest civilisers in the world. It is only by the spread of railways through the country that we can owaken the natives of India to the life of the present day, that we can rescue them from the misery of famine and its consequent evils, disease and destitution, and that we can insure their future prosperity and advancement. I ask you all to use your utmost endeavours to urge upon your members of Parliament and upon the Government the absolute and urgent need, both for the extension of our own trade, the means of livelihood of our working classes, and in every way for the benefit of our fellow-subjects in India, of rapidly doubling and trebling the present sparse railway mileage in India.



Typo. Etching Co. Sc.

Map prepared by Mr. J. K. Bythel to illustrate address on Indian Railways.

CREE INDIANS OF CALGARY.

By the Rev. C. E. SOMERSET.

[Read to the Members of the Society, in the Library, June 26th. 1889.]

I WAS very pleased to receive your letter of March 13th. I intended to have sent a reply sooner, but I have my hands full of one sort of work or another. A missionary on a small mission like mine has to be everything, so that at once I am parson, schoolmaster, doctor, and general man of all work. I have to arrange marriage difficulties, try and quiet down any little ill-feeling or misunderstanding between the Government and the Indian—in fact, I hardly know where my duties begin or end. The instructions given me by my chairman are, "Do the best you can for the people." I hardly know what to say respec'ing a short paper about this country and people. It would not be a very hard task to sit down and write you a rambling letter, because I know, for the sake of old times, you would exercise a little Christian charity, but when I see the names of the gentlemen who are connected with the Geographical Society, and remember that at least in one respect they are like the far-famed John Gilpin, "carry weight," I am just a little afraid, but as I am a few thousand miles away, and if I am hit hard I shall not know, I will do what I can.

Where I live, at Bear's Hill, the country is what is called out here "rolling prairie." It is just past the western limit of the Great Plains of the north west, which extend some few hundred miles, and are noted for an entire absence of timber. To-day (May 1st, 1889) the plains are very barrren, without any life except a few ducks and geese in the summer. The old trails are hardly used at all, as the railway does all the work. Riding in the train, the outlook is most uninteresting, but where I live all is different. Some thirty miles east of here a great change takes place, better water is found in the lakes and ponds, cottonwood, spruce, and willow grow all over. About twenty miles west of Bear's Hill we have heavy bush, spruce, cottonwood, poplar, birch, and willow covering the country almost altogether, until one reaches the Rocky Mountains, some 100 miles from here. At present this is an Indian country. We are without roads. Tracks through the bush—tracks that have been used for long past years by the Indians, as they have hunted the country (and it is a strange fact, an Indian never makes a road straight—we have often to travel almost twice the distance we need)—are almost the only roads we can find. If I were writing for an emigration society, I should point out the fact that here the land is first-rate in quality, any amount of timber for building outhouses, &c. The grass is all that can be desired, hay can be found in almost any quantity—in fact, for ordinary farming purposes, the belt of land north of the Red Deer River, for 150 miles, keeping west of the 113th meridian, is a very desirable land. The rivers, rising in the Rocky Mountains, have deposits of gold. The Saskatchewan is still being worked, but from what some of the miners tell me it is almost worked out. It would hardly pay anyone to come out here to work any of the rivers east of the mountains. Some few years ago I had the pleasure of meeting the Government Geological Surveyor. He told me that the country was full of coal, but he did not think it was very good. Coal has been found for years on the banks of the Red Deer

River, Battle River, and the Saskatchewan River, but the other day one of the Indians, in digging a well not far from my house, came across coal, in small quantities, very soft. It would be little better than wood, but still it was coal. I told the man we should all be rich now, if only he could find a sufficient quantity of the article.

Our weather is, as a rule, good. We do not get very much rain. June, July, and part of August are the months when we expect the rain; but, as a rule, we have much snow in the spring to start the crops. I sometimes see letters in the English papers in which we are informed that hardly any winter is to be found here. I do not quite understand what these people mean by winter. I have been here some years, and I have found out this fact, that the ponds freeze over in October. The ice thaws out in the day, but every night we have frost. November is the month when we have hard frosts. On the second or third of last November I saw twenty-nine head of cattle standing upon a pond at the back of my house, waiting for some one to cut a water hole. The Cree name for November is, "the month in which it freezes up." It is true the days are fine, and here we have very little snow, but still I call it winter. December, January, and February are very cold. I have lived here when the glass reached 64° below zero. In March, about the end of the month, the ponds begin to open up. The March moon is called the "Goose Moon," and we can expect before the last quarter to see geese and ducks back again. For three months in the summer we have flies, all sorts and shapes, from the small black fly to the bull dog (I don't know the correct names). So that even smoky Manchester, with its high death-rate, and (if one is to believe all that is written in your newspapers) its wicked Health Department, has charms for me yet; and if it were not for the work in which I am engaged, I would say good-bye to the prairie.

Now about the Indian himself. Well, he is not at all what I expected to find. All that I had ever read about Indians and their modes of life, their habits, &c., gave me a very wrong idea of the real article—at least, as I see him here. When we consider the Indian of to-day, we should try and picture to ourselves his past training. As far as I can judge, there are four classes of Indians whose habits are, in many cases, very unlike, the result of the nature of the hunting they have had to follow for years past. There are first the Mountain Indians, those who live in the mountains or just on the foot-hills; then we have the Wood Indians, those who have chosen the wood country in which to live; then we have the Lake and River Indians, those who have all along fished for a living; and last are the Plain Indians, those who lived upon the plains and hunted the buffaloes so long as they were to be found. The Mountain and Wood Indians in some respects are alike. They have ever been exposed to danger. The very nature of their class of hunting has made them cautious. They have always been making a study of nature and the habits of their game, which has brought their brain into action, and, as a result, they are apt to learn. Their life has been more or less full of danger, and they are now fearless of it. These men are very hard to reach—their old ideas are held very strongly, as one might expect; but when they *are* reached, and one gets the ideas of civilised life into their heads clearly, it has been worth the trouble, because they learn very fast. Their life has always been an active life. Work is therefore nothing new to them; they soon take hold of a change. On the other hand, the Plain and Swampy Indians have never lived an active life. Fishing daily for a couple of hours provides them with all the food they require, the rest of the day being spent in their lodges. This is their round of work. The Plain Crees are even worse than this. Years ago, the buffalo was their everything. The flesh provided all the food they needed; the skin was used for their clothing and tents; the dung was used for making their fires; they hunted a few months in the year—had then food enough for the rest—so that, for quite half their time, they did nothing but gamble or fight. If it had not been for the fighting, they would have sunk so low that they would have been almost helpless. The fighting was not very dangerous as a rule. They were often figthing for weeks at a time, and no one was hurt. The fighting seems to have been, as far as I can judge, horse-stealing—horses stolen from one tribe to be stolen back again, and so on day after day. Now what has this done, this lack of work? Why, when the buffalo left the country the Indians would have died out if the Government had not taken them in hand; but the years and years of idle life had not fitted them for farm life, and, as a result, they learn very slowly—and, as was the case in the past, so long as they could be fed they were contented—and we find it is no easy task to get them to work.

It is a rather difficult matter to get hold of a real Indian. I mean one who has not been, more or less, influenced by white men. For years the North-West Mounted Police have been in the country, and for the last seven or eight years bold settlers have been taking up land in the neighbourhood of Indian reserves, and the Indian has been brought into contact with them. I need not say that, as a rule, the Indian has not learnt very much good from the intercourse. I live among the Plain Crees, and I find they are nothing more than children with the smallest ideas. When I contrast these men with some of the men I used to meet in the little mission work I engaged in when in Manchester, the contrast is the greatest one can conceive; and it is no easy task to get down to their ideas in ordinary talk. When I go from my village I am expected to get all the news of the world; but as their world is limited, I am afraid I come back with very little news. It is not a very difficult matter to get along with them. Deal with them with perfect candour, let them see by every action that the wish is to be a friend, and they are prepared to receive us. I have never had the least trouble since I have been here, although I have often had to talk to the men in a very plain manner. The chief of my people "Louis Bull," is a very fair specimen of a man. He stands 5ft. 6in., is broad and strong, his hair is long and very black, but his face is an open one, and he is straightforward in his dealings. His influence over the rest of the men is very great, and is on the side of right. When he speaks, he does so with great power and force—he speaks what he feels, and he makes even the stoical Indian feel. He is one of the most go-ahead Indians in this part of the country. He told me some time ago he wanted to live as a white man did, and he was going to watch me. When I had a well dug, he started to dig one also. I advised him to put a good roof upon his house, and to give up living in a tent, and he has done so. His influence being on the side of the missionary is one reason why my task is not so difficult. Some two years ago he joined the Church. I used to watch him Sunday after Sunday—as I preached through an interpreter—and after I had explained what was required of those who wished to live a better life, and asked any who would join the Church to say so, all were quiet for some time, when up stood "Louis," and said he had been thinking for some time and now he had made up his mind. Since then I have had very little trouble with him. Of course he does not give up all his old ideas without a little trouble; but the man is a true man.

I hardly know what to think about the future of these people. I am very much afraid they will soon be lost altogether. They do not increase in numbers. They seem to be like the game of the prairie, they cannot stand the advance of civilisation. They have no past; they know very little of what they were. Most of the ideas they have are very simple, and are not very old. They are those which have been taught them by white people, years ago, such ideas as the sun dancing on Easter morning. Of course, like people of their class, they are generally very superstitious. It is not often they will move about at night. Thunder makes them afraid; the northern lights are the ghosts of their friends who visit them again. In fact, the air is full of strange things to them, but as you can find as much of this sort of thing at your door as I can here, it will not cause you much surprise. The medicine man is still feared, but I think his power is going. It has been found out that his power is limited, and he cannot hurt a white man, and, as a result, he has rather sunk in the eyes of the people.

I must conclude. I began this letter almost a month ago, but I had to put it on one side. I am very busy. If it is of any value to you, or of interest to your Society, I shall be very glad. I shall be most happy to write you from time to time. I have, however, offered myself for outpost work—a new work. I feel I am better at that than anything else, and I can sleep just as well upon the ground as upon a bed. I can live where an Indian can, so that perhaps I may receive marching orders some day.

Sketch Map by General Gordon.—Among his many other accomplishments General Gordon was famous even among Royal Engineers for his skill as a draughtsman. It has even been said that to it he was largely indebted for the extraordinary successes which he achieved over the Taipings, having before his appointment by the Chinese Government devoted a considerable time to a survey of the region in which the rebellion broke out. After he went to the Soudan, as the Khedive's governor-general, he usually sketched his numerous journeys, extending to many thousand miles throughout that extensive region. Mr. Edward Stanford, of Charing Cross, has just reproduced in fac-simile one of these maps. It was drawn at Khartoum on March 17, 1874, and was sent by the general to a friend in this country. It sketches the route traversed by him in journeying from Suakin to Berber and Khartoum. Thus it is not only of the deepest interest as a memento of the heroic defender of the capital of the Soudan, but possesses much intrinsic value in view of the approaching military operations along the identical route traced by General Gordon's own hand. What will add to the interest in the eyes of many are the itinerary notes in an exceedingly neat and distinct handwriting. In one of these, excellently reproduced in fac-simile, Gordon says: "Route from Suakin [he does not fall into the error of spelling the name Suakim] to Khartoum, Feb. 28 to March 13.—The road from Suakin to Berber is through an arid, mountainous country. As far as Ariab it is sparsely covered with dwarf trees of stunted growth. The wide plains are partly sand and partly black basaltic stone. From Ooback to Berber the plain is generally sandy, the wells are mere holes scratched in the beds of the rivers. During November heavy showers fall, but they are soon sucked up. Price of camel-hire from Suakin to Berber, 1½ Nap. Hire of boat from Berber to Khartoum, seven or eight Nap. The Nile rapids are dangerous to pass at night. Packages for camels ought to weigh about 150 or 120lb. The climate is very dry; hot during day and cold at daybreak." This bird's-eye view of the theatre of war is supplemented by the statement that "A steady wind from north (stronger in the first part of day) blows from the month of October till April, after which it blows from the south from May till September. The distance by road from Suakin to Berber about 288 miles. Sheep can be bought en route.—C. G. G. N.B.—The worst part of journey between Suakin and Berber is the latter half, the wells being so far apart." General Gordon's methodical character is shown by the extreme care with which, for the mere passing information of a friend, he catalogued every fact relating to his journey. The arrivals at and departures from each well or stopping-place are minutely noted to the day and hour all along the route. In addition he subjoins two notes which have some bearing on the approaching movements of our soldiers: "We left Cairo (he says) Feb. 21, arrived Suez Feb. 21; left Suez Feb. 22, arrived Suakin Feb. 26; left Suakin Feb. 28, arrived Berber March 8; left Berber March 9, arrived Khartoum March 13. The vegetation of Bahr-el-Gazal having been opened out, we ought to be at Gondokoro (leaving Khartoum on March 22) about April 15." Again the number of hours usually required for the various stages along the Suakin-Berber track is carefully contrasted with that actually occupied by himself, and it will be seen that on this occasion, as well as during his famous progress up the Nile Valley, he performed the journey in remarkably good time: "Handouba, 3 hours (we took 3 hours); Handoukh, 10 (we took 7); Goloos, 10 (7); Haritree, 10 (7); Hyab, 10 (9); Mattah, 6 (3); Ariab, 16 (9); Ooback, 24 (23); Berber, 24 (22)."—*Daily Telegraph.*

THE SNOWLINE OF THE TATRA MOUNTAINS.

By Herr KARL GRISSINGER.

[Translated by Mr. F. Zimmern, and read to the Members, April 1st, 1889.]

BY means of the numerous snowfields marked on the map of the Tatra Mountains, it was possible to decide some relative values, which are tabulated at the end of this treatise. The exposure of each snowfield was ascertained, its area squared, the height of the lower snowline reckoned according to the isothermal lines (Isohypsen), and the mean height of the circumvallation of the mountain calculated from the surrounding peaks. The angle of incidence of each snowfield was deduced from the difference in height of this circumvallation, and from the direct distance of the edge of the snowfield from the chief ridge.

The tables show that there are about forty snowfields in the Tatra Mountains, pretty equally distributed on the two sides of the chief ridge, of which, however, it is noteworthy that not one has a due west exposure.

The total area of the snowfields is 0·9,344 km., so approximately the same as the Falginferneo in the Oetz-Valley Alps. Almost two-thirds of the whole area lies south of the chief ridge, while only a little more than one-third belongs to thé snowfields north of the ridge. The unequal height of the circumvallation of the northern and southern snowfields agrees with this, as they are higher on the lesser ridges, which stretch southwards, than on the northern ones. The fact that the chief peaks are on the southern ridges points the same way. North of the chief ridge the mean circumvallation of the snowfields is 2,196m., and south of it 2,297m., so 101m. more. The orographic snowline lies in the centre on the north side of the chief ridge, at a height of 1,800m., while on the south side it reaches a height of 1,926m. The lowest snowfields stretch on the north side to 1,600m., on the south side as far down as 1,800m; while the highest snowfields on both sides reach a height of 2,000m. The mean temperature for the year can be pretty accurately determined from the observations of Zakopane (820m.) and other suitable stations for the north side, and of Neu-Schmacks (1,004m.) and other suitable stations for the south side. On an average, the doubtful fields reach the level of a yearly temperature of exactly 0°C. On the north side 0·2°C., south side 0·8°C.; while in the summer months the north ide shows a temperature of 9·5°C., the south side of 10·3°C.; and, in the winter months, 7·8°C. on the north, and 6·3°C. on the south. The difference in height between the orographic snowline and the mean circumvallation is about the same on both sides of the chief ridge—on the north side it is 396m., and on the south 370m. The mean distance of the snowfields from the chief ridge is also not very different, only varying by 29m.

The mean angles of incidence of the snowfields are the same on both sides of the chief ridge, but the sharpness of the angles shows that the perennial snowfields chiefly owe their existence to the snow of avalanches. Frequent trials have been made to determine the climatic snowline, and with very different results, according to the method chosen in determining this snowline.

The height of the snowline in the Central Carpathians is given by Wahlemberg as 8,000 Paris feet (2,600m.). He reaches this high figure, because on the small plateau of the Krivan (2,496m.) there is no perennial snow; while the lower Pilatus (2,133m.), on the Lake of Lucerne, is always covered with snow, notwithstanding its great steepness. But Partsch has since proved that not only are the peaks of Pilatus quite free from snow each year, but even in the Schneeloch, with a north-east exposure, the snow does not lie till autumn. Kolbenmeyer assumes the yearly isothermal line of 0°C. for the climatic snowline, and deduces the height of 1,940m. Fuchs assumes the summer isothermal line of 0°C. for the snowline, and puts the height at a level of 2,573m. Both heights are incorrect, because they were arrived at from observations taken from the foot of the Tatra Mountains, and not from stations on the mountain; and besides, the climatic snowline cannot be looked upon as a thermal line.

It is just as little advisable to decide the climatic snowline of the Tatra Mountains by comparison with other chains of mountains, as Koristka has done. He compared the Tatra Mountains with the Alps and the Altai, allowing for the latitude of the former, and for the influence of the south wind on the theoretical snowline, and assumed a height of 6,900 to 7,000 feet.

By comparing valley and border stations, Beyer first calculates the mean yearly isothermal line of 0°C. at 1,600m., which number is probably incorrect. He thus arrives at 2,250m. for the theoretical snowline, having regard to the latitude of the Tatra Mountains. This number he, however, appears to think too low, for soon after he says, "It (the snowline) lies above the highest peaks, which all stare at the observer with weather-stained walls." The meteorological conditions, which are so unfavourable to the formation of snow in the higher Tatra, cause the snowline to be so extraordinary high; especially in winter the deposit is very slight, and even slighter in the higher regions than in the lower parts. Summer showers destroy the winter covering of snow; as does also the summer heat. Besides, Beyer takes the south winds into consideration, which also play a prominent part in destroying the snowfields. Now it is not correct that the deposits of winter are slighter in the higher regions than in the lower. Beyer uses very little and not very well-chosen material to characterise the deposits, and besides, even in the height of summer, there are numerous snowfields in the Tatra Mountains, not destroyed by either rain or south winds, as I know from personal observation.

Finally, the opinion of Partsch, who takes the climatic snowline of the Tatra Mountains at 2,300m. may be mentioned.

Partsch proves that in the Alps similar perennial accumulations of snow only lie 100 to 200m., never more than 300m. lower than the snowline of the relative division of the mountain, at the foot of steep, snowless precipices, which overtop the snowline by only 200 to 400m., and are not out of reach of the summer influences. Partsch has assumed 2,000 to 4,000m. for the lower snowline in the Tatra Mountains, and so, by addition of 200m., arrives at the above-mentioned height for the climatic snowline.

I certainly believe, that the appearance of snowfields in such numbers in the Tatra Mountains can only be explained by the neighbourhood of the climatic snowline. If they could be ascribed to orographic conditions only, they would probably be met with in all sheltered parts of the mountain chain. They are really met with only in the neighbourhood of the highest regions, and indeed almost entirely around the Lomnitz and Eisthal peaks. In other parts they appear singly, and almost always accumulated near peaks of 2,500m. No lower peak has a perpetual snowfield, however favourable the sheltered exposure may be for such a phenomenon. If shelter from the direct rays of the sun merely would protect the snowfields, one might assume that they would be more frequent on the north side of the chief ridge than on the south. But the contrary is the case, and as the southern snowfields have a higher circumvallation than the northern, it is clearly seen that in the Tatra Mountains the appearance of snowfields is not regulated by *the exposure*, but by the *height of the circumvallation*. Under such circumstances, it would be safe to assume that those mountain peaks at whose declivities the snowfields are found themselves belong to the region of perpetual snow.

THE SNOWFIELDS OF THE TATRA MOUNTAINS.

NORTH OF THE CHIEF RIDGE.

EXPOSURE.		Area in Square Kilom.	Height of lower Snowline in Meter.	Mean height of Circumvallation in Meter.	Difference in height in Meter.	Direct distance from Chief Ridge in Meter.	Angle of Incidence.
North of the Krivan	N.W.	0·0208	1900	2198	298	200	56°
North of the Skorüsiuk............	N.E.	0·0080	1800	2033	233	240	44°
South of the Grünsee (1819)	N.E.	0·0144	1800	2133	333	320	46°
North-East of the Côte (2207)	N.E.	0·0096	1800	2035	235	800	16°
West of the Eisthal Peak	N.W.	0·0080	1900	2409	509	400	51°
	N.W.	0·0096	2000	2409	409	400	45°
North of the Eisthal Gap..........	N.	0·0080	1600	2133	533	680	38°
	N.	0·0080	1600	2133	533	600	41°
	N.W.	0·0112	1700	2133	433	600	35°
	N.W.	0·0064	1800	2133	333	240	54°
	N.W.	0·0128	1900	2133	233	360	33°
North of the Grünsee Peak	N.	0·0240	1900	2315	415	360	49°
	N.W.	0·0112	1900	2315	415	400	46°
	N.W.	0·0128	1800	2315	515	720	35°
	N.W.	0·0400	1800	2315	515	680	37°
West of the Weissee Peak	N.W.	0·0272	1700	2145	445	360	51°
	N.W.	0·0192	1700	2145	445	600	36°
North of the Weissee Peak	N.	0·0144	1800	2111	311	320	44°
		0·2656	1800	2196	396	460	40°

SOUTH OF THE CHIEF RIDGE.

EXPOSURE.		Area in Square Kilom.	Height of lower Snowline in Meter.	Mean height of Circumvallation in Meter.	Difference in height in Meter.	Direct distance from Chief Ridge in Meter.*	Angle of Incidence.
South of the Meerang Peak	S.W.	0·0400	2000	2361	361	400	42°
West of the Gerlsdor Peak	S.	0·0528	2000	2516	516	480	47°
South of the Felk Peak	S.E.	0 0544	2000	2355	355	480	36°
East of the Eisthal Peak............	S.E.	0·0448	2000	2454	454	400	48°
	S.	0·0432	2000	2454	454	360	51°
South-East of the Lomnitz Peak....	S.	0·0240	1900	2349	449	360	51°
	S.E.	0·0160	1900	2349	449	600	36°
North-East of the Keswark Peak ..	E.	0·0256	1900	2337	437	680	32°
North of the Lomnitz Peak	N.	0·1200	1900	2348	448	920	26°
Nerth of the Keswark Peak	N.	0·0304	2000	2253	253	320	38°
East of the Grünsee Peak	S.E.	0·0128	2000	2308	308	280	47°
	E.	0·0192	1900	2308	408	520	38°
	E.	0·0256	2000	2308	308	400	37°
East of the Rothsee Peak	E.	0·0224	2000	2212	212	280	37°
	N.	0·0288	1800	2212	412	280	55°
	S.	0·0272	1800	2212	412	280	55°
South of the Weissee Peak	N.E.	0·0128	1800	2108	308	240	52°
	S E.	0·0304	1800	2108	308	560	28°
	S.E.	0·0384	1900	2108	208	360	38°
		0·6688	1926	2297	370	431	40°

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* When the snowfield did not depend on the chief ridge, the direct distance was measured from the corresponding lesser ridge.

The climatic snowline in the Tatra Mountains should be sought at the height of the circumvallation of the snowfields—2,200 to 2,300m.—so that the highest peaks would extend about 400m. above the climatic snowline.

There is, nevertheless, not a perpetual covering of snow, because the steepness of the highest parts of the mountain prevents snow from accumulating.

On the north side, the temperature which might be expected at the height named is for the summer months 7·5°C., for the winter months 6·0°C., and for the whole year 2·2°C.; on the south side, for the summer months 8·6°C., for the winter months 7·8°C., and for the year 1·1°C.

So the mean temperature for the year of the climatic snowline in the Tatra Mountains agrees with the yearly temperature of the snowline in the Austrian Alps; while for the summer months the temperature of the climatic snowline is higher, for the winter months lower, in the former mountains than in the latter.

The Yang-tze-Kiang.—The manner in which the Chinese are treating Mr. Little's demands for a permit to attempt the navigation of the Upper Yang-tze as far as Chungking is very characteristic. The Chefoo Convention provides that Chungking shall not be opened to British trade "until steamers have ascended thither," because it was not known at the time whether the river was navigable or not. Mr. Little, having satisfied himself that it was, obtained aid in this country and took out a steamer specially constructed for river navigation. He immediately applied for a permit from the Chinese Government to make the voyage. By the treaty he was clearly entitled to this, but the Chinese have their own way of doing business. At first they would not hear of any such project; the people along the banks were unaccustomed to steamers, and would be so astonished at the sight of one that they would forthwith begin rioting, and would injure the vessel and its crew; the river was full of foaming cataracts, that would smash any steamer to atoms; the hills adjoining were inhabited by a race of ferocious monkeys, who would roll great rocks on the steamer, and who on account of their great agility could not be arrested by the local officials; the gods themselves viewed the scheme with dislike, for if they had intended the river to be traversed by steamers they would not have placed rocks and other impediments in the bed. But under the steady pressure of the British Foreign Office in insisting on the treaty rights of British subjects, these objections gradually disappeared, but not before many months had been lost. At last consent was given to the pioneer trip, subject only to one condition. To prevent the danger of collision with junks trading in the river, regulations were to be made by the authorities at Ichang, the port from which the steamer was to start. This seemed a very simple matter, occupying a few days at the very most; and Mr. Little took his departure from Pekin feeling that the long-expected voyage was at last about to commence. But on arriving at Ichang he found that none of the Chinese officials there had power to discuss the regulations. This could only be done, he was informed, by officials coming from the capitals of the provinces of Szechuen and Hupeh, and for their arrival he must wait with such patience as he possessed. This was in November, and by the end of January they had not made their appearance in Ichang. Chengtu and Wuchang, the provincial cities in question, are long distances from that port, and when the officials do arrive there will probably be the usual difficulties in getting them to work, and then the result of their labours will doubtless have to be sent to their superiors for ratification, so that it may be autumn before the matter is finished and the steamer is enabled to start. Procrastination is as the breath of his nostrils to a Chinese official; but the opening of the Upper Yang-tze to foreign trade, sooner or later, is as certain as that the sun will rise in the heavens. This magnificent waterway, the natural outlet for the trade of about 70 millions of people, cannot be kept shut against Europeans indefinitely. At the same time it is to be hoped that these prolonged and costly delays will not exhaust Mr. Little's patience and means, for he has made the scheme his own, and it would be a pity if any untoward circumstance should now deprive him of the success which he has so justly merited.—*Manchester Guardian.*

CORRESPONDENCE.

AFFAIRS ON THE WEST COAST OF AFRICA.

[From a Correspondent at Lagos.]

ABEOKUTA.

JUST before leaving England last year you asked me for some information in reference to some reports regarding Abeokuta. I have recently returned from another visit to the West Coast of Africa, during which I have again been to Abeokuta. I think I may assure you that at present the authorities there have no intention to grant any favour to the prejudice of British interests, but I think something more should be done to attach the natives of the interior to our government. Whether deserved or not, we have a reputation of being slow and supine. The Egbas—namely, the people of Abeokuta—are sometimes tempted to act unpleasantly towards us. There is a disaffected section in the community by whom the loyal chiefs and others are occasionally harassed. On the occasion of my last visit to Abeokuta, in April last, intelligence had arrived respecting the Dahomian attack on Porto Novo. It was currently reported that the English had secretly connived with the Dahomians, and that a serious attempt was made to raise an anti-English demonstration. On the 7th of April (a Sunday) important deliberations were conducted by the authorities. Ebullitions of anger were here and there displayed, and an attack was expected, and a very anxious day was spent. However, the cloud passed off, and the ground of this suspicion appeared to be the fact that an influential Dahomian prince had been for some weeks residing at Lagos. On this occasion I was returning from a tour through the Yaruba country. I regret to say that the region through which I travelled was in a state of great unrest. At Jubu Ode the king and chiefs expressed their deep regret and vexation over the interminable Ibadans and Ilorins, which are sadly interfering with trade. The Ibadans, while prolonging their strife with Ilorin, are also troubled with the Egbas raiding their farms. The relations between Ibadan and Oyo are in a condition of extreme tension. At Ogbomosho complaints were loud and deep on account of the unceasing spoliation of their farms by the Ilorins, with kidnapping and occasional slaughter. I gathered further that within the last eight or nine years thirteen Yaruba towns have been destroyed by the Dahomians, and there is a further loss of seven towns destroyed last year. From what I can gather, these towns were of similar population, having about 4,000 inhabitants, while several were much larger. In my journey I passed through the ruins of some of the towns which, a few years ago, were large and influential centres of population and commerce, notably Ijayi and Biolorum Pellu. I cannot but feel that it would be an unspeakable mercy if some benevolent, civilised power could interfere to cause the chronic strife to cease, and develop the abundant riches of the country. After getting some fifty or sixty miles from the coast the country is comparatively healthy and fertile, as the plantations of cotton, indigo, &c., plainly indicate, and in some parts evidently rich in mineral treasure. I saw several iron pits and smelting furnaces, and have some specimens of the iron ore by me. I availed myself of the many opportunities afforded me in interviews with the kings and chiefs to urge upon them the necessity of peace and industry, and was received with the most generous welcome wherever I went in the Yaruba country. The reply of one chief was remarkable. He said, "You tell us how much we should be advantaged if we would abandon our quarrels and unite for strength and prosperity. Your words are true, but we are like children fighting. Each is ashamed to be the first to stop, but both wish for nothing better than for some strong man to step between us and send us away to do something wiser." The interest you have shown in West African affairs must be my apology for sending you this communication.

PORTO NOVO AND ITS AFFAIRS.

The first intelligence I received about the recent troubles at Porto Novo was on my arrival at Abeokuta on the 4th of April last, whilst returning from a journey into the interior. The rumour was that the Dahomians had destroyed Porto Novo, and that they were encouraged to do this by the British authorities at Lagos. I remained in Abeokuta until Monday the 8th of April, and in the interval saw some chiefs who questioned me on the subject. I assured them that the British would never compromise themselves in such a way, and begged them to to despatch a messenger to Lagos for accurate information. In the meantime, however, great excitement prevailed, and on the 7th a number of the natives, alarmed by sundry threats, armed themselves and prepared to defend themselves from attack. It was widely believed that the above rumour was true, and the anticipated attack was based on their connection with white missionaries, but the collision was averted. As soon as possible after reaching Lagos I went to Porto Novo, arriving there on April 22nd. I found matters in a sad condition. Out of the ten thousand people not one thousand remained. I walked through streets, some silent as a grave, with blackened walls and charred timbers on either side, and others with here and there a timid native moving furtively along. The history of the Dahomian attack, as I gathered it, is as follows: On the 27th of March, about 11 a.m., the town was agitated by an alarm that the Dahomians had invaded Porto Novo territory and destroyed five towns on the north-west, and were then encamped but a few miles away. On receipt of this news King Tofa, of Porto Novo, assembled his troops, and ordered them out to reconnoitre. They were not long before they met the enemy, and a short, sharp conflict waged. The Porto Novians were victorious, and returned to the town displaying several heads of their foes and a number of captives. Two days after, on the 29th, another engagement took place, in which the Dahomians seemed to have gained an easy triumph. The men of Porto Novo fired a volley; the Dahomians returned the compliment, and with wild cries rushed forth and carried all before them. The loud shouts of the invading army inspired them with valour and their enemy with fear. Seized with panic the Porto Novians did not attempt a second volley, but turned and fled, while others fell by the shots of the swiftly pursuing foe. Some sixty or seventy failed to come back alive. In this battle five of the principal chiefs were slain, besides other men of rank and influence. King Tofa himself then turned coward, and ran to the opposite side of the lagoon, about two miles across. Then a general exodus took place. The Dahomians, however, did not venture within the town, but nevertheless nine-tenths of the people rushed to the water side and sought to escape by their canoes. In the hurry to escape many were drowned, and of those who reached the opposite shore, shelterless, and with only swampy ground to camp on, many died. Then, doubtless caused by one of the fugitives in his terror and haste to escape, a fire broke out and consumed a large section of the town. Of course many distressing incidents occurred. During my stay in the town there was another report that the enemy was coming, and again there was a rush to the canoes attended with loss of life. The soldiers (!), with great show of valour, went to the walls, but no enemy was to be seen, although some were prowling not far away, as one or two were unfortunate enough to discover, escaping with their lives but not without wounds. After spending a few days in exile, and finding that the Dahomians did not enter, and urged by the French commandant, King Tofa returned, and has had some French soldiers to protect him. During my stay in this place I observed that many came back to the town every day, but returned to the swampy camping ground at night. Much property has been stolen. Old King Gegele of Dahomey is dead. He died, I have been informed, a year or two ago. For a long time this fact was kept secret, nor is the time yet arrived to make it public. Before his successor can be crowned he must distinguish himself by some signal success in war. Prince Kondo is the present candidate, and is fired with ambition to take Porto Novo or to capture the King. "All I want," he is reported to have said, "is Tofa's head." A sort of French protectorate is supposed to be in vogue in Porto Novo, but it does not seem to be worth much. In conversation with several intelligent natives I found the almost unanimous wish is to be placed under British protection. On April 25th the people were much distressed by a statement of Tofa that he expected the Dahomians to enter the town in seven days. He also sent away his wives, children, and people to the opposite side of the lagoon, where he joined them that night. From a letter I have recently received from Porto Novo I copy the following extract: "The French have put up a notice calling the people home, but they have no faith in this. All they want is to see the country ceded to the British. King Tofa is now helpless, utterly rejected by his subjects. But what can he do? To fight the Dahomians is quite impossible. He has no force to do this. The French, on whom he relies, make no move. To the British Government he cannot apply for fear of the French." My correspondent says further that he has no fear of the Dahomians entering the town while the French are there, but the villages from which the town draws the chief portion of its food supplies are utterly defenceless. It would be a great pleasure to me to see the country in a more settled condition, the people dwelling in security and employing themselves in peaceful and prosperous pursuits.

The Manchester *Guardian* has the following remarks on this letter:— "The extracts from letters received by Mr. Eli Sowerbutts, which we give in another column, indicate a state of things in West Africa which is extremely unsatisfactory. Mr. Sowerbutt's correspondent has been resident for some time in Abeokuta, and he has travelled a good deal through the surrounding country. Everywhere he found strife and confusion. Where the petty chiefs are not engaged in actual war the feeling of insecurity is so great that no one can think of embarking on any trading enterprise. 'In my journey,' the writer says, 'I passed through the ruins of some towns which a few years ago were influential centres of population and commerce, and I could not but feel it would be a mercy if some benevolent civilised power could interfere to cause the chronic strife to cease and develope the abundant riches of the country.' The chiefs themselves are evidently of the same opinion. They would gladly, we are assured, place themselves under the protection of Great Britain. They seem to themselves 'like children fighting,' they would willingly give it up and turn to something wiser, if only the 'strong man' were to turn up and separate them. At Abeokuta the writer learned of the attack on Porto Novo by the Dahomians. The only ground for the attack is the desire of a young chief of Dahomey to distinguish himself. The old king is dead, and before a successor can be elected he must give some signal proof of valour. The head of King Tofa of Porto Novo alone will satisfy the aspirant to the throne, and a rumour has unfortunately got abroad at Abeokuta that he and his followers are encouraged in their raids by the British authorities at Lagos. The country generally is in a very deplorable condition, and trade is at a standstill. It is not easy, however, to devise any immediate and effective remedy. In

South Africa we have taught the native chiefs the virtue of self-restraint, and they are not ungrateful for the enforcement of the lesson, but there we had no rival keeping a jealous eye over every one of our movements. On the West Coast it is different. France is guarding King Tofa at Porto Novo, and the English authorities at Lagos have to be careful not to tread on French susceptibilities. The result is that no one will move very energetically, and the petty chiefs look for the strong man in vain."

[From the Very Venerable the Rev. Chauncy Maples.]

Lukomo, July 15th, 1888.

Dear Mr. Sowerbutts,—Many thanks for your letter of date March 22nd. I received it about three weeks ago, but had not time to answer it at once. As yet the north-end fighting has not affected us or our position on this island, and we are all in hopes that matters may be settled satisfactorily. At present the Ilula is up there, we believe, and at least twenty whites are engaged in the fighting. We have received no news of their recent doings, but we suppose that some sharp and severe action has been taken with the Arabs. Personally I cannot but think that our Consul—Consul Hawes—has acted wisely and humanely throughout, though the feeling against him is strong and rather widely shared. So far as I have heard, and so far as I have been able to form an opinion, my confidence in him as our representative in these parts remains unshaken; and I am glad to take this opportunity of emphasizing this, especially as it is likely you have heard, or will hear, much on the other side. Our work goes on here very satisfactorily on the whole, I trust. Mr. Wilkins and I are practically alone here, for Mr. Johnson lives entirely on the "Charles Jansen," and she is but seldom in port here. You see *Central Africa*, I think, and so you know most of our news. I hope to return to England next year, when I hope to see you again. My sister mentions a kind letter you sent her. She and my people generally have had many trials and afflictions lately, and I dare say it might help to cheer them up if I can manage to get to England next year and see them all.

We are expecting our new centre-board boat out very soon—indeed, I think we shall probably have it up here in a fortnight, for the "C. J." has gone down to Matope, and will probably, or, perhaps, I ought to say possibly, bring it up in tow. My work, however, keeps me very closely to the island. My sister has a MS. account* of this island—its geology and natural features, its inhabitants, &c. I think you might be interested in it, if you care to apply to her. I wrote it last year.

I amuse myself now in my leisure moments chiefly with music, an art I have loved from my earliest years. I am not a great performer, I need hardly say, but I get a great deal of amusement out of the harmonium we have here, and lately I have been giving time to the study of harmony and composition. My duty is mostly taken up in teaching in the schools and adult classes. Only last Sunday I admitted 28 adult women as catechumens: it was an interesting service. We have as yet only baptised six people on this island. We put all our converts through a long probation. Heathenism is a tree with deep roots, and they are not easily or quickly dug up, as you know. I am thankful to say I enjoy perfect health out here, and although I am now a missionary of more than twelve years' standing, I feel as fresh, if not fresher, than when I first came out. I shall be much interested to read the report of the conference.

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* This article will be found on page 59, &c.

*REVIEWS.**

THE MINERVA LIBRARY OF FAMOUS BOOKS. Edited by Mr. G. F. BETTANY, M.A. 400 to 600 pages. 2s. Illustrated and Maps. *London: Ward and Lock.*

THESE reprints of famous books will be a great acquisition to those who are unable to obtain the original issues. The scheme covers a wide range, but we have to confine ourselves to the books issued dealing with our special subject. Of these we have seen Darwin's "Journal of a Voyage Round the World;" Wallace's "Travels on the Amazon;" Galton's "South Africa," with Vacation Tours, including A Visit to North Spain at the time of the Eclipse of 1860, by Mr. Galton; Nábloos and the Samaritans, by Sir George Grove; and "Naples and Garibaldi," by Mr. W. G. Clark, M.A. The books are very handy for reading, and well printed. Two of them contain indices, and are illustrated with sketch maps, views, portraits, &c. The members of the Society will be pleased to have their attention directed to this admirable series. The object of the series is to provide, at a moderate cost, a selection of the greatest writings in the world.

THE WORLD'S GREAT EXPLORERS AND EXPLORATIONS. Edited by Messrs. SCOTT KELTIE, MACKINDER, and RAVENSTEIN. About 300 pages, fully illustrated, with portraits, views, maps, and indices. 3s. 6d. per vol. *London and Liverpool: G. Philips and Son.*

THE issues are "John Davis," by Mr. Clements R. Markham, and "Palestine," by Major C. R. Conder, R.E., and there are promised in the issues works on Magellan, Franklin, Saussure, Park, Livingstone, Ross, Bran, Vasco da Gama, Humboldt, Barentz, Columbus, Cook, and others. If the succeeding volumes are equal to those mentioned above, the publishers will have placed the students of geography very much in their debt. The books are well done, and the maps and illustrations add very greatly to the value of the works. Major Conder's "Palestine" is a book of very great value. The maps alone, rendered by a competent authority for the first time in a shape within the compass of all, are especially valuable. The work of the Palestine Exploration Fund has been going on for years, and yet, except in a very limited circle, the results have not been known. This book will give some idea of the difficulty with which the work was prosecuted, and the great service done to all those who are interested in Palestine, whilst at the same time there is now placed within the reach of all interested in the right understanding of the Old and New Testaments information which has hitherto been beyond their reach. No Sunday school is complete without the wall map issued by the Palestine Exploration Fund at a very small cost, and no Sunday-school library or student's library will be complete without this most interesting and beautiful book. The life of John Davis by Mr. Markham is delightfully written, and brings this old history before us very vividly, and we feel, as we lay the book down, that "we gratefully accept this book, not only in regard of our friendly regard towards him, but of our love for his favourable courtesy." We sincerely hope the publishers may be encouraged in this venture until the whole series have been issued, when our British public will have had placed in their hands the stories of peril, adventure, and heroism, with a great mass of scientific knowledge, for a few shillings, such as can otherwise hardly be obtained at any price.

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* See also pp. 172 and 282.

MEMOIRS OF MRS. REBECCA WAKEFIELD. By R. BREWIN. 236 pp. Portrait and Views. 1s. 6d. *London: A. Crombie.*

THIS is a simple and touching story of the life of a devoted woman, and will well repay perusal. Mrs. Wakefield was the first wife of our member, the Rev. T. Wakefield, who has spent so many years of his life on the East Coast of Africa. Mrs. Wakefield went with her husband to that country, and laid down her life there. The memoir is simply written, but the very lack of garish tribute adds pathos to the story.

VARIOUS SUBJECTS. By C. H. STOTT. 274 pp. *Manchester: J. Cornish.*

THESE are a series of reprints of articles from newspapers, written by Mr. Stott at various times. Some of the articles are particularly interesting. They range from Clubs, Tall and Little Men, the Children's Hospital, the Manchester Jubilee Exhibition, to the Bible Society and the Singing Frog. Some of the articles are serious, and full of matter for thought. Others are intended to be humorous, and are full of fun. Mr. Stott's friends will value these reprints, and doubtless many will be surprised at the range of subjects placed before them in this little book.

INTRODUCTION TO THE STUDY OF COMMERCIAL GEOGRAPHY (Part I.) Map Drawing and Projections from Memory, &c. By Mr. J. J. CARDWELL. Illustrated with a number of diagrams and projections. *Manchester: John Heywood.*

THIS little book is the amplification of addresses given by Mr. J. J. Cardwell to several meetings of teachers during the Exhibition of Geographical Appliances held by this Society two years ago. The book is one which must be of great value to all teachers, and the matter is made so plain that, whilst there may be no royal road to learning, this book has made the road considerably easier. It is a straightforward statement of the author's ideas on the subject, and is largely the result of his practical work. The greater part of the book is taken up with the theory of map drawing and projection, but the two last chapters of the book, dealing with "The Importance of the Study of Commercial Geography" and "The Teaching of Commercial Geography" are particularly valuable. Our members will be glad to see the syllabus Mr. Cardwell used, and is using, in his commercial geography classes at the Harris Institute, Preston, the Manchester and Stockport Technical Schools, and the higher classes (evening) of the Manchester Board Schools. The publication of the Rev. L. C. Casartelli's "Notes on Commercial Geography," Mr. A. Hughes's "First Book on Geography," and this one, all by members of this Society, will, we trust, show that some of us are trying to awaken a keener interest, not merely in the more scientific relations of geography, but to the practical application of the great truths and facts of the science to every-day commercial life. Mr. Cardwell's syllabus is as follows:—

SYLLABUS OF LECTURES ON COMMERCIAL GEOGRAPHY AND PRACTICAL COMMERCE,

at the Technical School, Manchester; the Technical School, Stockport; the Harris Institute, Preston; and the Higher Commercial Classes under the Manchester School Board.

THEORETICAL.

I.—ECONOMICAL GEOGRAPHY AND COMMERCIAL HISTORY OF COUNTRIES, comprising their present internal resources and external sea-borne commerce, with a study of the special points mentioned after the name of each—

1. *Lancashire,* illustrating the laying of the foundations of modern trade and commerce, or the rise and development of the textile manufacturing industries—especially cotton—and the rise and development of modern means of communication—especially the railway.
2. *Great Britain and Ireland,* with a study of the rise and development of our commercial supremacy.
3. *Our Colonial Supremacy and the Commercial Federation of the British Empire,* with a special study of (*a*) Canada, (*b*) South Africa, (*c*) Australasia, as sources of raw materials, fields for emigration, markets for finished goods, or rival producers.
4. *Our Great Industrial and Commercial Rivals—France, Germany, and the United States.*

   (*a*) France, as an agricultural country, contrasted, from an economical point of view, with Great Britain, a manufacturing and a mining one.

   (*b*) Germany, illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League and the modern Zollverein, with special reference to the commercial federation of the British Empire.

   (*c*) The United States, studied as our provider, best customer, and greatest rival.
5. *The Balkan Peninsula and the Eastern Question, from a Commercial Point of View.*

   (*a*) Old Turkey, New Europe, and the Highway to India.

   (*b*) Greece, or the Britain of the Mediterranean—the lessons to be learnt from a study of the rise and decline of her colonial and commercial supremacy in the past, with the application of those lessons to the case of the colonial and commercial supremacy of Britain in the present.

II.—ECONOMICAL GEOGRAPHY, COMMERCIAL HISTORY, AND TRADE IN PRODUCTS.

1. *The Geographical Distribution of the More Important Economic Plants and Animals,* with the reasons for the same.
2. *Bread Plants,* with the trade in Grain.
3. *Beverage Plants,* with the trade in Tea, Coffee, and Cocoa.
4. *Clothing Plants,* with the trade in Cotton and Linen Goods.
5. *Wool-producing Animals,* with the trade in Woollen Goods.
6. *The Geographical Distribution of the More Important Economic Minerals,* with the reasons for the same.

PRACTICAL.

The study and examination of actual specimens of the *materials of commerce, in their raw state, in the progress of manufacture, and as finished goods, with illustrations of the various processes involved in their production,* to all which the particular attention of the student is specially directed.

PROCEEDINGS OF THE SOCIETY

FROM APRIL 1st, 1889, TO JUNE 30th, 1889.

EIGHTY-NINTH MEETING.

A joint meeting of the Chamber of Commerce, the United Cotton Spinners' Association, and this Society, was held on Friday, April 5th, 1889, at 3 o'clock p.m.; Mr. HENRY LEE, J.P., in the chair.

Mr. HOLT S. HALLETT, C.E., F.R.G.S., &c., addressed the members on "The Necessary Extension of Indian Railways for the Development of British and British Indian Trade." (See pp. 181-7.)

The address was illustrated with large maps, and was listened to with great interest.

A hearty vote of thanks to Mr. Holt Hallett was carried unanimously.

Mr. HALLETT responded.

Thanks to the Chairman were given by acclamation.

NINETIETH MEETING

Of the Society, held in the Memorial Hall, on Tuesday, April 9th, 1889, at eight o'clock p.m.; Sir J. C. LEE, Kt., J.P., in the chair.

Mr. JOSEPH THOMSON, F.R.G.S., addressed the members "On Impressions of Morocco and the Moors." (See pp. 101-118.) The address was illustrated by maps and lantern views.

The Rev. S. A. STEINTHAL moved a vote of thanks to Mr. Thomson for his address, Mr. HILL (Mr. Thomson's host) seconded the motion, which was supported by Mr. DOWDALL, who objected to some of Mr. Thomson's remarks on the condition of the Jews in Morocco. The motion was passed unanimously.

Mr. THOMSON replied to Mr. Dowdall's remarks by saying he thought the condition of the Jews was the result of centuries of cruel oppression, and acknowledged the vote of thanks.

The Rev. T. WAKEFIELD moved a vote of thanks to the chairman, which was seconded by Mr. M. STIRRUP, F.G.S., and carried heartily.

Sir JOSEPH LEE responded.

Mr. J. F. Hutton apologised for non-attendance, he being away from home ill.

A number of announcements were made, and the meeting closed about ten o'clock.

NINETY-FIRST MEETING

Of the Society, held in the Library, on Wednesday, April 17th, 1889, at 7-30 p.m.; Surgeon-Major J. M. BLACK, M.R.C.S.E., of Edinburgh, in the chair.

The minutes of meetings held March 20th (89th), April 5th (joint meeting), and April 9th (90th), were read and approved.

The election of the following members by the Council was announced:—

ORDINARY: Messrs. Wm. Aldred, F.C.A., Wm. Armitage, J.P., J. P. Leslie, Emil Liebert, H.I. Majesty's Consul for Germany, Wm. Marlor, J. Newall, J. H. Reynolds.

ASSOCIATE: Messrs. A. Ellison, Binns Kershaw, H. Yule Oldham, M. L. Tait, and Mrs. M. Roebuck.

The following letters were read:—

From Mr. R. P. Goldschmidt, in reply to the vote of condolence on the death of his father:—

"Manchester, March 22nd, 1889.

"Dear Sir,—I am in receipt of your kind lines of March 18th, and request you to convey to the members of the Manchester Geographical Society the sincere thanks of myself and all our family for the kind words of sympathy with us in our bereavement.—I am, dear sir, yours very sincerely, "R. P. GOLDSCHMIDT.

"Eli Sowerbutts, Esq."

From the Ven. Archdeacon Chauncey Maples, Lukoma (see p. 205).

From the Madrid Geographical Society, stating terms of membership in that society, and the rules of the society, as follows:—

GEOGRAPHICAL SOCIETY OF MADRID.

Articles of its Statutes, Royal Order of 11th November, 1885, and Resolutions Concerning the Use of the Medal Granted by Government as Distinctive Attribute of its Members.

EXTRACT OF THE STATUTES OF THE SOCIETY OF 21ST MARCH, 1876.

Article 18. The Society is formed by an indefinite number of members, with free residence foreigners being admitted under the same conditions as Spaniards.

Article 21. Members are admitted in an ordinary meeting, entrance having been solicited either personally or through another member.

REAL ORDEN.

MINISTERIO DE FOMENTO.—*Universidad.*—Al Director general de Instrucción pública digo con esta fecha lo que sigue:

Ilmo. Sr.: Accediendo á lo solicitado por la Sociedad Geográfica de Madrid, S. M. el Rey (q. D. g.) ha tenido á bien autorizar á los individuos de la expresada Sociedad para que en toda clase de solemnidades y actos científicos usen medalla ajustada al modelo presentado.—Lo que de R. O. traslado á V. E. para su conocimiento y demás efectos.

Dios guarde á V. E. muchos años. Madrid 11 de Noviembre de 1885.—ALEJANDRO PIDAL.—*Excmo. Sr. Presidente de la Sociedad Geográfica de Madrid.*

ARTICLES OF THE STATUTE OF 16TH NOVEMBER, 1886, FOR THE USE OF THE SOCIETY MEDAL.

Article 1. The medal may be used by: (1) Honorary presidents, honorary members, and honorary corresponding members. (2) Life members.

Article 4. It is a necessary requisite for the use of the medal by life members to have paid the entrance and life fees.

Article 7. The member who resigns his membership, or should be excluded by the Society, loses his right to the use of the medal. If it should come to the knowlege of the Society that any person uses the medal unlawfully, the Society may demand responsibility to the said party. It will furthermore publish in the fourth sheet of the cover of its "Bulletin" the name of the offender, and besides, if he were a member, will be immediately excluded from the Society; and, not being a member, notice will be taken of his name and address to impide his entry into the Society.

Article 8. Members of the Geographical Society, who have a right to the use of the medal, may and should use it in all sort of solemnities and scientific acts in which they represent the Society or merely assist as members of same.

Article 9. Foreign life members on their entry into the Society will receive, on payment of 315 pesetas, the diploma, the statutes of the Society, the medal, and copy of the Royal order authorising the use of same.

MARTIN FERREIRO, Secretary.

From the Paris Geographical Society, in reference to the forthcoming Congress of Geography in Paris; and other letters of interest.

NINETY-SECOND MEETING

Of the Society, held at the Technical School, Princess Street, Saturday, April 27th, 1889, at three p.m. The members were received by the secretary, Mr. J. H. Reynolds. The members (about 160 ladies and gentlemen) first visited the wood-carving and mechanical engineering departments in Princess Street, and afterwards went through the spinning and weaving departments in Peter Street.

Mr. REYNOLDS, in explaining the different objects of interest, said that the school was composed of day and night students, and that most of the tools were made by well-known Manchester firms. Some were given to the schools, whilst others, made by the teachers and students together, were also a gift. The whole of the machinery was worked by a gas engine. Besides wood carving, there was a complete course of instruction in mechanical construction and drawing, chemistry, plumbing, printing, &c. He might mention, as being of interest to them, that he was endeavouring to arrange for a course of lectures on commercial geography and history, and he hoped that at the commencement of next session the arrangements would be completed, with a sufficient number of pupils to take an interest in these two subjects. On arriving at the Peter Street schools, Mr. Reynolds explained that these schools were formerly used as a Swedenborgian chapel and school, and when it came into the hands of the Technical Schools the council decided to use the schools for spinning and weaving. The whole plant had been given by Messrs. Dobson and Barlow, of Bolton. The instruction given here was in connection with the Manchester textile trades. Around the walls they would see a set of chromo-lithographs illustrative of various designs of Eastern carpets, and they would also notice a fine series of steel engravings, presented by Mr. William Agnew, of men celebrated in mechanics:—

1. Crompton, the inventor of the mule.
2. Roberts, the inventor of the self-acting mule.
3. Arkwright, the founder of the factory system.
4. Heilman, the inventor of the improved power loom, and other improvements.
5. Jacquard, the inventor of the jacquard loom.
6. Fairbairn, the eminent machine maker and engineer, of Manchester.
7. Radcliffe, the inventor of the dressing machine.

After the different processes had been explained, the members adjourned to the model-room, and held a meeting, Mr. O'CONNOR being in the chair.

Mr. HAINSWORTH then moved, and Mr. A. A. KRAUSS seconded, a vote of thanks to Mr. Reynolds for his kindness in inviting them there that day, and for his interesting explanation of the different processes they had seen that afternoon.

Mr. REYNOLDS, in reply to the vote of thanks, said he was pleased to welcome the members of the Manchester Geographical Society, and he hoped they had spent a pleasant and profitable afternoon. They had now in the schools 3,200 individual students, but yet there were a large number of students who were unaware of its existence. The staple industries of this great city received adequate illustration both here and at Princess Street. He was glad to find that they had been impressed by what they had seen, and he should be pleased to welcome any of the members of the Society who might wish to visit the school on a future occasion.

The thanks of the members to the Chairman closed the meeting.

NINETY-THIRD MEETING

Of the Society, held in the Memorial Hall, on Wednesday, May 1st, 1889, at 8 p.m.; Mr. Councillor B. T. **Leech** took the chair until the arrival of the Rev. S. A. **Steinthal**, who afterwards presided.

Mr. **Arthur Montefiore**, F.R.G.S., addressed the members on "Florida and the English." (See pp. 129-150.) His address was illustrated with photographic views and map, and Mr. Newett had very kindly lent a set of photographic slides of Florida, which were ably shown by Mr. **Stanley**.

A number of questions were asked and replied to.

A vote of thanks was moved to Mr. Montefiore, and seconded, and supported by Mr. W. H. **Newett**, and carried.

Mr. **Montefiore** responded.

A vote of thanks to the chairman closed the meeting.

NINETY-FOURTH MEETING

Of the Society, held in the Library on Monday, May 13th, 1889, at 7-30 p.m.; Mr. B. J. **Belisha** in the chair.

The Secretary made announcements of future arrangements, and of presentations, as follows:—

Mr. Carl Flemming, Glogau. Map of Samoa.
Commander G. Holm. Two Monographs on Greenland.
Senor F. Latzina. Account of the City of Buenos Ayres. Vol. 1.
The Tyneside Geographical Society. A Famine Map of China.
Messrs. W. and A. K. Johnston. Map of England and Wales. Four sheets in cases.
The Cobden Club, by Mr. T. B. Potter, M.P. Thirty publications.
Mr. Moir Crane. "Garenganze."

The thanks of the Society had been sent to the donors.

Mr. **Wm. Ashman** addressed the members on the Cape Colony, the Transvaal, and Natal. His address was illustrated with map, photographs, water-colour sketches of flowers, and with specimens of minerals, and was listened to with great interest.

A very long conversation ensued between the members and Mr. Ashman.

Mr. **Aldred** moved, and Mr. **O'Connor** seconded, a vote of thanks to Mr. Ashman, which was heartily carried.

Mr. **Ashman** responded.

The death of Mr. John Slagg, one of the founders and a vice-president of the Society, having been announced, it was resolved, on the motion of Mr. **Wm. Mosley**, seconded by Mr. F. **Radcliffe**, and supported by the Rev. L. C. **Casartelli**—

"That the members of the Manchester Geographical Society, at its first meeting held after the death of Mr. Slagg, begs most respectfully to sympathise and condole with Mrs. Slagg and her family on the sad and early close of a brilliant career, and esire to place on record their peculiar sense of the loss this Society has sustained in the death of one of its founders, and one of its most hearty friends; and that the Secretary be requested to forward the resolution."

The resolution was carried by all the members rising in their places.

A vote of thanks to the Chairman, and a few words of reply from him, closed the meeting.

NINETY-FIFTH MEETING

Of the Society, held at the Ardwick Museum, Ardwick Green, on Friday, May 17th, at 7-30 p.m.; Mr. B. O'Connor in the chair.

Mr. H. Hyde received the members and conducted them through the museum, explaining that the intention of the establishment was the popularising of the study botany, natural history and geology, and the usefulness of the contents of the museum as a reference for students.

The members were very much interested in Mr. Hyde's description and the collection he had personally gathered.

A very hearty vote of thanks was given to Mr. Hyde for his invitation to visit the museum, and for his lengthy and interesting explanatory address.

Mr. Hyde responded, and a vote of thanks to the chairman closed the meeting.

NINETY-SIXTH MEETING

Of the Society held at the General Post Office, Saturday, May 25th, at 4 o'clock. Fifty of the members were received by Mr. R. W. Johnston, the Postmaster, and being divided into three parties, were conducted by him and Messrs. Ambler and Mason, his assistants, through the whole of the building—the working of the different departments being fully explained. The visit took up a considerable time, and was most thoroughly enjoyed.

Each party thanked its respective conductor, and left to the Council the duty of suitable acknowledgment to the Postmaster.

NINETY-SEVENTH MEETING

Of the Society, held in the Library, Wednesday, May 29th, at 7-30 p.m. Mr. J. Shaddon in the chair.

Minutes of meetings held April 9th (90), 17th (91), 27th (92), May 1st (93), 13th (94), 17th (95), 25th (96), were read and approved.

The election of the following members by the Council was announced:—

Ordinary: Messrs. T. H. Birley, Rd. Hambly, G. C. Haworth, Matthew Hilton, Charles Rowley, John Walkden, E. Wright.

Associates: The Misses M. E. Watts and F. E. Watts, and Messrs. J. A. Bottomley, J. W. Brierley, Edward Hinmers, W. Jackson, J. Kirkham.

The following presentations were announced:—

The Author. Nunquam's Notions.

Academy of Sciences, Bologna. Report of Progress of the Movement in Relation to the Unification of the Calendar, &c.

M. G. Rolin, Avocat. Chronique du Droit Internationale, No. 5.

Lieut.-General Brackenbury. Map of Eastern Turkish Armenia, two sheets.

Mr. O. Andreasian. Kiepert's Map of Asiatic Provinces of Turkish Empire.

Mr. Carl Flemming. Maps of Asia and South America.

Herr J. H. de Bussy. Map of Guiana, South America.

New Corresponding Society announced. Finland Geographical Society, Helsingfors.

Correspondence was read and announcements made for the June and July meetings and excursions.

The following addresses were then read :—

HISTORICO-GEOGRAPHICAL MEMORANDUM CONCERNING THE CREATION OF NEW COUNTIES IN NORTHERN MINNESOTA.

By Mr. A. J. HILL, St. Paul, Minn.

[Read to the Members, in the Library, Wednesday, May 29th, 1889.]

In former years it was the praiseworthy custom of the Territories and States of the North American Union to endeavour to do honour to and perpetuate the memories of those adventurous men of the white races who had, as traders, missionaries, commanders, and otherwise during the seventeenth, eighteenth, and first half of the nineteenth centuries, penetrated the wild regions out of which the understood political divisions were subsequently framed; and also the memories of those others whose deeds of courage and enterprise had materially contributed to their permanent welfare.

Moved, therefore, by such disinterested sentiment, the people of the North-west have, from time to time, named many of their most important geographical divisions, their counties, after men such as those referred to. Thus, for example, we find of the earlier class, arranged in chronological order, the following :—

1 In the State of Illinois, admitted into the Union in 1818, *Menard* and *La Salle*, amongst its 102 county names.

2. In the State of Michigan, admitted into the Union in 1837, *Marquette*, *Charlevoix*, *St. Clair*, *Schoolcraft*, and *Baraga*, amongst its 82 county names.

3. In the State of Iowa, admitted into the Union in 1846, *Dubuque*, and *Floyd*, amongst its 99 county names.

4. In the State of Wisconsin, admitted into the Union in 1848, *Marquette* and *Langlade*, amongst its 68 county names.

5. In the State of Minnesota, admitted into the Union in 1858, *Hennepin*, *Le Sueur*, *Carver*, *Morrison*, *Cass*, *Beltrami*, *Aitkin*, *Nicollet*, *Pope*, and *Stevens*, amongst its 80 county names.

In this showing, Minnesota appears to greater advantage than the other States quoted, but that may be attributed to a large extent to the interesting hydrographical fact that three great rivers, the St. Lawrence, the Mississippi, and the Red River of the North, have their ultimate sources in its highlands.

Whatever may be the case with the first four States, the list for Minnesota by no means contains all the earlier names, but the time has gone by when the remainder could be brought into prominence by being attached to county areas, as a glance at the map will show.

Of the many deserving names excluded from this cartographical immortality, the principal ones are *Groseilliers*, *Radisson*, *Perrot*, *Panchot*, *Verendrye* and *Marin*, of the time of the French domination; and *Thompson*, *Pike*, *Schoolcraft*, *Long*, and *Whittlesey*, of the succeeding Anglo-Saxon period. Now to those who think it would be well were the names of a few of these men put upon our maps in the way indicated, I would like to show that there is yet a way in which it can be done. As to selection, that should be made on a very proper rule that the name of an explorer should only be applied to a tract over some part of whose soil his feet had passed.

Forty years ago, the whole territory of Minnesota was rudely blocked out into nominal counties, some of them of very large size. As time went on the increase of population made subdivision necessary, and new counties were created at almost every session; but this increase and this subdivision were in a general direction from south-east to north-west, leaving the northern third of the State, outside of the Red River valley, almost unaltered till to-day. The time is rapidly approaching, however, when some further division of this region will be necessary, *i.e.*, that comprised within the boundaries of St. Louis, Cass, Itasca, and Beltrami counties, which has ceased to be looked upon as fit only to supply the small wants of the wandering savage, and furnish ultimate fields of operation for the enterprising lumber-man.

In view, therefore, of all the foregoing considerations, the following comprehensive scheme, might perhaps furnish useful suggestions when steps are taken to establish new counties in the far north of Minnesota.

I.—RADISSON COUNTY

Could comprise so much of Itasca county as lies north of an east and west line running on some lines of the U.S. surveys through Town 62 of the fourth meridian, and Town 151 of the fifth. Such a line would leave the proposed county entirely within the watershed of the Rainy Lake river.

Groseilliers and Radisson were two adventurous Frenchmen, and the very first white men known to have visited Minnesota, as they wintered in the villages of the Sioux of the Lakes (*i.e.*, in the present Mille Lacs country), in 1661-2. On the same occasion they also visited their former acquaintances, the Christinaux (now the Crees) or a band of them, distant seven days' journey, which must have taken them to the neighbourhood of, or across, Rainy Lake river, as that nation was scattered, or wandered about, all along the country from Lake Winnipeg to Lake Superior. As a name for a county, that of Radisson is preferable to Groseilliers, for the former word, when used by English speaking people, would be much more correctly pronounced than the latter; besides this, Radisson was the one who wrote the journal of their travels, the publication of which, a few years ago, first revealed the names of the tribes and places that they visited.

II.—VERENDRYE COUNTY

Could comprise so much of Beltrami county as lies north of the line between Towns 156 and 157. By this line the proposed county would be entirely within the hydrographical basin of Rainy Lake river and Lake of the Woods. This would fully clear Red Lake, and allow it to remain in the parent county, which was named after the man who first brought it, as well as the Turtle river sources of the Mississippi, to public notice—in 1823.

By the adoption of this name an able but unfortunate man would receive a fitting, though tardy, local acknowledgment of his merits. Verendrye was the first (in 1731) to explore and follow as a trade route, the lakes which form our northern boundary, and it was in connection with his enterprises that they were first mapped and brought to the attention of the French Government. He built forts, or trading posts on Rainy Lake river and Lake of the Woods (west side), as well as others beyond to the westward and north-westward.

III.—THOMPSON COUNTY

Could comprise as much of Itasca county as lies south of the proposed county of Radisson, above described. It will be noticed that the name "Itasca" would be done away with by the creation of these two counties, but no reasonable man would object to that, seeing it was a pure misnomer in the first place. To have to explain for all time to come that Lake Itasca is not in Itasca county on the one hand, or that Itasca county does not possess the sources of the Mississippi river on the other, is a state of things which should be avoided, if possible.

David Thompson was an expert surveyor, who was in the service of the great fur companies of British America for many years. In 1798 he travelled through northern Minnesota, and ascertained, amongst other places, the geographical position of the trading post on the north shore of Red Cedar Lake, the same afterwards, and still, called Cass Lake, by reason of the visit there in 1820 of Governor Cass and his party.

IV.—WHITTLESEY COUNTY

Could comprise so much of the northern part of St. Louis county as includes Lake Vermilion, the southern boundary being the line between Towns —— and ——, *i.e.*, some line which would suit the vested interests existing in that recently-developed mining country.

It is to Colonel Charles Whittlesey, deceased, that we are indebted for a valuable report on the geology of Vermilion Lake and St. Louis river, published by the State in 1866.

The creation of four such counties as thus described would practically complete the geographical division of the space between the Mississippi river and our northern frontier, leaving it to time to develop the resources of each, and bring around such settlement as would justify its admission to the number of its organised fellows. If this be done now, the list of counties to appear in next year's census will probably not differ much from that to be used in 1895, and even from the further one of 1900, which would tend to facilitate the statistical work of the future.

AUSTRALIA.

"Curiosities of Australia," a geographical lesson, by Mr. William Ashburn.

The address was prepared with the object of adding to the popular knowledge of the great island continent, and was intended to be a model lesson in geography.

After describing the general uninformed ideas upon the subject in the public mind, Mr. Ashburn advanced to the purely geographical portion of his text, giving the boundaries, extent, and general features of the country. Advancing a little, there was some notice of the geology of Australia, and the prominent surface strata being gone over, a survey of the important geological differences was attempted. Some peculiar fossils were described, amongst others the labyrinthodon (the lecturer spoke somewhat disrespectfully of this ancient reptile as a "Manx alligator"); and the absence of the strata of the secondary epoch was commented upon, and shown to have had much to do with subsequent developments.

It will be seen that the phrase "Curiosities of Australia" promised very little. But still, treating the subject with a geographical purpose, no feature which was capable of investing the subject with interest was neglected. The climatic discrepancies, the biological absurdities, the floral monstrosities were brought forward in due course as aids to the mind of the student in fixing locality, distance, and configuration. The diversified surface of Australia was thus fairly brought to the mind of the listener, and he was able to follow the lesson of the address, and acquire an idea of the wonders of the land, with its deserts of sand, of stone, of marsh, and even of mud; also of its extent of coast without river. It must be remembered that the great Australian Bight is miles in length, and has no stream at all, not even a rivulet, running over its arid cliffs to the sea. Then there were named and described the vanishing and reappearing lakes, and last of all the numerous instances of rivers without outlets. The second portion of the address was devoted to the history of the country. There was reviewed, first, the early discoveries, the first of these being a Portuguese discovery in 1601, with subsequent Dutch and French discoveries, and finally the first English visit by William Dampier. Then Captain Cook's visits, and then the early convict settlements, and so on to the present times. The last portion of the address consisted of selections from accounts of the various explorations of Australia, the march of Charles Eyre, and the almost incredible hardships he endured in traversing the great Australian Bight; the scarcely less marvellous adventures of Sturt in discovering and exploring the great river Murray; the sad and tragic story of Burke and Wills's journey across the centre, with others. In conclusion, Mr. Ashburn said that all he had found time to say was only an indication of the various subjects of interest which students of geography would find in Australian geography.

The chairman and others took part in the discussion of the several addresses, and the thanks of the meeting were cordially given to the readers of the papers. Mr. Ashburn responded for them and for himself.

The death of Mr. J. J. Armitage, one of the members of the Society having been made known to the meeting, it was moved by Mr. W. ALDRED, and seconded by Mr. F. E. JACKSON:—

"That this meeting of the Manchester Geographical Society having heard of the death of Mr. J. J. Armitage, one of the members of the Society, this meeting desires very respectfully to offer to the family of Mr. Armitage its very sincere sympathy in this loss, and begs to add its condolence on the very sad event."

The resolution was carried unanimously.

A hearty vote of thanks to the chairman closed a most interesting and prolonged meeting.

NINETY-EIGHTH MEETING

Of the Society, held in the Memorial Hall, on Wednesday, June 5th, 1889, at 7-30 p.m.; the Rev. S. A. STEINTHAL in the chair.

The Chairman received the members at seven o'clock, and they spent some time in examining a number of geographical and technical boxes kindly brought from Liverpool by Mr. Silberbach, and a series of wall cartoons lent by the Religious Tract Society.

Mr. J. H. SILBERBACH, one of the managers of the Wirral Diocesan Schools, addressed the members "On the Teaching of Elementary Commercial Geography in Primary and Secondary Schools, and in a Minor Degree of Elementary Technical Instruction." (See p. 151-171.)

At the close of the address the Rev. A. S. STEINTHAL said: We have listened with much pleasure and interest to Mr. Silberbach's address, and I am sure he has added to our information on the subject with which he has been dealing.

Dr. CASARTELLI said that Mr. Silberbach had touched upon so many subjects, all of which were interesting and important to us—especially interesting from an educational point of view—that he hardly knew what to remark upon first. He might say, however, that the boxes which had been brought before them that evening were excellent aids to the teaching of geography, for which very little had been done in this country. He could not but feel that the list of subjects was already overcrowded. At the same time many of these subjects were only old friends under new names. It was a good idea to send these boxes round from one school to another, and in this way a very large district could be served. He thought that schools that were able to do so should form similar collections for themselves, and thus encourage their pupils in trying to gather together specimens as well as they could. These boxes might be supplemented by the teachers, and the mere fact of collecting would be a most excellent training for the staff and pupils. It would be more valuable if they were to make their collection, first, of the local industries. He, however, thoroughly approved of the collection which had been shown them that night. Mr. Silberbach must have had great difficulty in getting the specimens together. It was not only of importance to have such collections, but teachers should be able to use them. Simple lessons on the climate, the soil of the country, and their characteristics, with specimens of the products, were invaluable in teaching geography, otherwise it was something like teaching Euclid without figures. Geography, in some form, ought to be a very important part of the education of every child, and in that he cordially agreed with Mr. Silberbach. He was also at one with him in condemning the rigidity of our system of education. Not only in England had we carried out this "cast-iron" system, but, strange to say, it had been carried out even in India. An examination paper set at a native school, in Madras, for native pupils, who were learning English, was very much like the papers of the University of London. Passages from an English author were set, asking for explanations of some old, mediæval, quaint expressions, and these had to be got up by natives of India! What real use could such questions be to a native learning the English language? It seemed to him to show the impractical nature of the education we were forcing upon the people of India, and a good deal of that kind of thing was carried on at home.

Mr. **Wardle** quite agreed with the value of this kind of teaching, and so far as regarded the elementary schools, he ventured to say that they had been well in advance of the teaching of the secondary schools in this subject. But one thing they should bear in mind, the teachers of elementary schools had not a free hand in the matter. Inspectors of schools required certain things doing. He, however, would say that, for every subject that was included in the code, the subject of geography, as illustrated by specimens, had been taken up by masters and mistresses, who had been at great pains to accumulate many specimens in order to illustrate their geography lessons. Boxes like those shown were tolerably expensive, and beyond the reach of ordinary schools. The present code would have to be much altered before these things could come into practice. He was glad to think that the outlines of the new code promised better things. At present they had to teach the children according to what they were expected to be examined in. He believed in the teacher examining his own class. It had been objected that this step would only result in cramming, but he thought that any inspector, in five minutes, would see whether such was the case. What they wanted was encouragement, and the paper read to-night, together with the very valuable collection shown there, was a step in this direction. In the exhibition given by this society some time since, there was a map of England illustrating the different industrial centres, such as Manchester, Leeds, Bradford, and Macclesfield.

Mr. Councillor **Leech** wished to add his testimony to the admirable address to which they had listened. He thought that if boxes of this kind, illustrating English products, were circulated first among the different schools, then the foreign products could afterwards be taken. With regard to modern languages, we had been very backward in our large towns, and if our young men would only get well grounded in modern languages it would greatly facilitate matters in going abroad.

Mr. J. H. **Reynolds** said Mr. Silberbach had furnished a valuable illustration of teaching through the eye as well as through the ear. One of the causes of the barrenness of our educational system was that the children were not kept at school long enough. Children left school at far too early an age. Out of 4½ millions there were in the 7th Standard only 47,000. In Matthew Arnold's report of eighteen months ago he pointed out the superiority of the German system, which kept their children longer at school, and had their knowledge consolidated. At Wolverhampton, 97 per cent. of the children attending school left at the age of 11½ years. He asked how could they expect that any education could be secured by keeping children from the school at this early age, when, in the course of two or three years, they forgot all they had ever learned, and the consequence was they got them back again into the evening schools as absolutely ignorant as if they had never been at school. He advocated children being shown round such places as the technical schools, where they could see every process carried on and investigate the method of doing it. It was through the eye and the fingers, as well as the ear, that people must be taught. It was this kind of education that was wanted. He moved that the best thanks of this meeting be given to Mr. Silberbach for his interesting and instructive address.

Mr. CARDWELL, referring to Mr. Reynolds's remarks that children should have the opportunity of visiting such places as the technical schools, said that they need not go very far for specimens; and he took the opportunity of mentioning that they had excellent museums at Peel Park, Queen's Park, St. Bede's College, and the animals at Belle Vue. He had great pleasure in seconding the resolution.

Mr. H. YULE OLDHAM, in supporting the resolution, said nothing could be more delightful than in seeing these boxes, which he thought particularly interesting in teaching geography. So far as the higher schools were concerned, the teaching of geography was simply abominable. These boxes seemed to him to explain clearly and systematically what things were. Geography ought to be as important as languages. It ought to be the foundation of history, and there should also be taught physical geography and geology, and, of course, commercial geography would come in.

Mr. Silberbach replied, and a vote of thanks to the Chairman for his conduct in the chair terminated the proceedings.

After an interval for refreshments and music Mr. Silberbach had conversations with a number of the members, who, being engaged in education, were very much interested in the subject and the exhibits.

During the evening music was again given by Miss Edith Webster (piano), Miss Clara Walker, Mr. G. V. Webster, and others.

The thanks of the Society were cordially given to the chairman and to all who had contributed to make the meeting of so pleasant a character.

NINETY-NINTH MEETING

Of the Society, at St. Bede's College, Alexandra Park, on Saturday, June 22nd, at 3 p.m. His Lordship the Bishop of Salford, Monsignor Wrennall, Monsignor Gadd, Rev. L. C. Casartelli, and the staff of the College received the members.

After an inspection of the Commercial Museum, the Rev. L. C. CASARTELLI, addressing the members on the Museum—its contents, usefulness, and value for educational purposes, said: This little museum is primarily intended for use in the teaching of Commercial Geography. In 1876 the Bishop of Salford gave me a sort of roving commission to visit certain schools abroad with a view to studying their systems of commercial education, and in my very first report I referred to the desirability of forming such a commercial or geographical museum as this. When at the well-known Commercial College of Mille, near Ghent, which possesses one of the most complete and admirably arranged museums of the kind which I have seen, I asked M. Bernardin, who has formed it, how he had managed to get together such a capital collection. "I began," he replied, "with a sheet of writing paper." Little by little, by asking different firms for specimens, and especially by visiting the various international exhibitions and obtaining donations, he had gathered the present very complete museum. We have done the same. We are indebted to many firms, especially to those represented at our Manchester Exhibition of 1877, for very handsome sets of specimens. Also the Victorian and Canadian Commissioners at the Paris Exhibition of 1878, and still more several Colonial Commissioners at the Colonial and Indian Exhibition of 1886, have sent us valuable and interesting contributions. Speaking generally, the museum falls into two chief sections: (1) Collections of the raw materials of different branches of trade and commerce, and specimens illustrative of manufacturing processes (see cases A to M, comprising salt, spices, beverage plants, dyeing, soap, candle, and varnish making, brewing, sugar trade, flax, cotton, silk, steel, cutlery, chemicals, &c.); and (2) geographical and ethnographical collections, illustrative of various lands and peoples, but principally of our own colonies (cases N to GG, comprising Victoria, Canada, West Africa, Fiji, British Guiana, India, West Indies, Asia, Africa, Australasia, various parts of South and Central America). I should like also to call your attention to the cards, about a hundred in number, of the series called "Le Musée Scolaire," published in Paris and Brussels. You will see them on the walls of our corridors. Of these, some are merely pictures. Others carry actual specimens of raw or manufactured materials. I was told that the London School Board had purchased some sets of them, but, unfortunately for English schools, all the explanations are printed in French. Many of us had the privilege of admiring Mr. Silberbach's admirable collection of "boxes" for teaching Commercial Geography at a former meeting. Excellent as they are, I think that institutions which have the opportunity should be encouraged to form collections of their own of this kind. Of the utility of such collections, whether in boxes like Mr. Silberbach's, or on cards like the Musée Scolaire, or like this museum, there can be no doubt in the mind of any teacher.

Mr. Sowerbutts said that the Society had taken a new departure in having these visits. What they wanted was to know Manchester, and they were just beginning to find out the wealth of the city and the district immediately surrounding us in institutes similar to those they were visiting to-day. One advantage, he thought, of Mr. Silberbach's cases of specimens over a museum like this was that they could carry the specimens from school to school, but he saw no reason why the Manchester School Board should not have a central depot, where the selected children could have their instruction in Geography and Natural History. I would like to make one more remark. To-day I received a programme of an atlas to be issued by Hachette & Co. This specimen showed us how hopelessly we were behind in map making. In England we did not make maps, we only made diagrams.

After the museum, the members proceeded to inspect the Science Lecture-room, and the collection of chemicals, and natural philosophy instruments and mathematical models. They also went through the practical laboratory lately opened, which affords complete accommodation for eight pupils at analysis work. In this department, the science master, Mr. F. Landolt, exhibited and explained a number of valuable instruments, many of his own construction, showing his "projectograph" apparatus for demonstrating perspective, mathematical models, a new and complete orrery, &c.

Mr. Fridolin Landolt, in receiving the members in the Laboratory, said: Some years ago, when it became quite fashionable to teach Solid Geometry, Perspective, &c., even in the most elementary schools in England, any trained teacher could not help thinking: how is it possible that those branches of mathematics, which are taught abroad only in the advanced classes and in technical schools, can be explained properly to children with scarcely any foundation? Reflections of that sort, and the anxiety to impart a sound knowledge of such a complicated nature, must have compelled many a teacher to construct apparatus illustrating geometrical dimensions, not only on a sheet of paper but also in the space. It would lead us too far to explain the whole series of apparatus and models placed before the visitors. We limit ourselves, therefore, to the outlines of a particular instrument, called by the constructor "projectograph." Although rather complicated, on account of a great number of mechanical contrivances, the projectograph can easily be handled by a skilled teacher. Besides, it will be servicable for a complete course of three or four years, not only for solid geometry or projections, but also for perspective. Fixed on a movable stand, it can be raised or lowered according to the height of the student, folded together after use, and kept in the polished case free from dust. The chief parts of the projectograph are two planes, namely, the picture plane, represented by a transparent glass pane, and the ground plane, represented by a horizontal folding leaf. The operation is very simple. The teacher applies one eye to the station point, a pinhole in a vertical disc, and draws with his right hand on the perpendicular glass pane the object placed behind the picture plane. After this he replaces the glass pane by a transparent canvas, through which any number of black silk threads up to forty may be drawn from the station point to the corners of the fixed object. These silk threads represent the rays of light passing from the object through the canvas and united in the eye of the spectator. At the same time the teacher will refer his experimental illustrations to the geometrical construction and compare the projected lines drawn from the centre of vision, point of distance, vanishing and measuring point with the other silk threads which cross the space in different directions. The student not only sees at once the coincidence of the picture drawn on the glass pane and canvas with the geometrical construction, but he grasps also the relation between reality and geometrical drawing, and thus enjoys a sounder and more interesting knowledge than by grinding a dry and confused mechanism. Constructor can state from experience that students, after a long groping in the dark, scarcely can give any reasonable account of their own work, which is soon forgotten, whilst experimental illustrations make such a strong impression on the young mind that, should a great part of theory be forgotten, the practical part can easily be revived. It would be impossible to give a full description in a few lines and without any diagrams, but the constructor of this instrument will always be highly pleased to show and explain it to anyone who takes interest in the subject. An application to the rector of St. Bede's College, Monsignor Wrennall, will be sufficient. One or two advantages may be yet mentioned. As a large amount of measuring is connected with projection and perspective, much time would be required. To reduce actual measuring the operator, when fixing the object, has simply to read off the distances from scales, which run along the sliding parts. Almost an endless variety of positions can be realised by the large amount of sliding and woodwork. Thus the interest for a subject, dry as it may appear to the beginner, is kept up through a long and graduated course. It may also be mentioned that our projectograph is equally useful for class and private teaching, as well as for practical work, because large objects as furniture and machine parts, if placed on the floor of the room, can be introduced.

Mr. **Cardwell** next gave an address to the members on "The Teaching of Commercial Geography."

Mr. **Sowerbutts**: We are very fortunate indeed to have Mr. Cardwell give this lecture to us. He has been lecturer at the Harris Institute, Preston, and their report gives a very appreciative account of Mr. Cardwell, and only regrets there were not more pupils. He was also about to give a series of lectures to the Technical Schools this session. Mr. Cardwell is also one of our members; and we are pleased to say that in the matter of education we have forced the question of geography to the front in our universities. But while Oxford and Cambridge—which in comparison are exceedingly wealthy—have chairs for geography, Victoria University, which represents the commercial element, has not been helped to have a professorship of geography founded.

The members were shown over the College buildings, and on the invitation of Monsignor Wrennall had tea.

After tea, several admirable recitations were given by the Professor of Elocution.

Professor CORE moved, Mr. W. T. EVANS seconded, and Mr. JACKSON supported a motion that the very best thanks of the Society be tendered to Monsignor Wrennall and the staff of the College for their very kind reception, and for the opportunity of examining an Educational Institution so complete, admirable, and beautiful.

The Rev. MORLEY STEVENSON moved that our thanks be given to Dr. Casartelli and Mr. J. J. Cardwell for their interesting addresses. Mr. W. WARDALE seconded the motion, and it was heartily carried.

Mr. SOWERBUTTS said it would be interesting to know that the Bishop of Salford, who took such a lively interest, was one of the founders of the Society. He was also concerned in a previous movement which ended in chaos. But out of that darkness came light. This Society was helped into existence by his lordship, and fostered by the late John Slagg. But not only was his lordship a founder, but the Bishop has stood by us and is one of our vice-presidents. Dr. Casartelli has been one of the council, and Monsignor Gadd a vice-president from the beginning. Although we have lost some of our members by death, their memory is green; and if the Society does its work it will tell its tale for years to come, when those who have stood by it have been laid low.

The Very Rev. Monsignor Canon WRENNALL responded. He said: I am exceedingly grateful to you for your thanks to myself and my colleagues. It has been a great pleasure to us to see you here to-day. The college has not got into its teens, but I have no doubt when it gets into manhood it will be better worth going over. We have always taken a great interest in the Manchester Geographical Society, and I rejoice in their success.

After the responses from Monsignor WRENNALL and others, the members visited the College cricket field and dispersed, having had a very great amount of enjoyment.

(This list of the contents of St. Bede's College Commercial Museum was prepared for the use of the Members, and is of value as a guide to others preparing College or School Collections.)

Only the cases of interest for Geography, Ethnography, and Industries, are lettered (A to GG). The remaining cases are for Natural History, Geology, Antiquities, &c. The names in square brackets are those of donors.

A.—SALT. Rock Salt. Sections of strata (red sandstone) bored in piercing for rock salt on the banks of the Tees. Specimens of rock salt. [Messrs. Bell Bros. Limited, Middlesbrough.] Brine. Salt obtained from brine. The same refined. [Mr. T. M. Walsh.] Salt from Victoria.

UTILISATION OF SO-CALLED "WASTE" NATURAL PRODUCTS. Exemplified by Tissues made of seaweed in Australia (East Kempsey, McLeay river). "Cosmos" textile material and cloth (50 per cent wool), made of nettle fibre, Ghent. [Prof. Bernardin, Melle.]

VARIOUS PRODUCTS.

B.—SPICES. Comprising mustard (Sinapis nigra L.), in seeds and ground; pepper (Piper nigrum L.), black, white (*i.e.* bleached); long pepper (P. longum L.); pimento, allspice, or Jamaica pepper (Eugenia pimento D.C.); anise (Pimpinella anisum L.); ginger (Zinziber officinale, Roscoe) also bleached and ground; cayenne (Capsicum annuum L.); nutmeg (seed of Myristica moschata, Thunb.), and mace (envelope of nutmeg); cassia, or bastard citron (Cinnamon cassia); clove (Caryophyllus aromaticus L.); caraway (Carum carui L.); cinnamon (C. Zeylanicum, Nees). [Mr. Leake.]

PLANTS YIELDING STIMULATING BEVERAGES, and containing the element like "caffeine": (1) Tea: collection of Chinese and Indian teas. [Mr. J. F. Mart, J.P.] Ceylon tea. (2) Coffee: Bahia coffee. [Mr. C. Vaughan.] Other coffees in cases. (3) Cocoa: Bahia cocoa, Ceylon cocoa, [Mr. C. Vaughan]; cocoa flowers beans, and nibs. Vanilla Pods (Vanilla aromatica), South American orchid, used to flavour chocolate. (4) Yerba Maté, or "Paraguay tea" (Ilex Paraguayensis—species of holly), the South American beverage plant. (5) Kola Nuts, West Africa.

C.—DYEING WOODS AND VEGETABLES: [Messrs. E. D. Milnes and Bro., Lumn Mills, Bury.] (1) Brazil Wood (Cæsalpinia Brasiliensis, natural order Leguminosæ) from Brazil. (2) Fustic (Morus tinctoria, natural order Artiaceæ), West Indies. (3) Logwood (Hæmatoxylon Campechianum, natural order Leguminosæ), Campeachy, S. America. (4) Nicaragua Wood, species of No. 1: Nicaragua. (5) Lima Wood, species of No. 1. (6) Barwood (Baphia Nitida, natural order Leguminosæ), Sierra Leone. (7) Sapan Wood (Cæsalpinia Sapan, natural order Leguminosæ), Siam, Japan, and East Indies. (8) Logwood (common, see 3), Jamaica. (9) Camwood (species of Baphia, natural order Leguminosæ), West Coast of Africa. (10) Sanderswood (Pterocarpus sandalinus, natural order Leguminosæ), India, Ceylon, East Indies, &c. (11) Young Fustic (Rhus estinus, natural order Anacardiaceæ), West Indies and South Europe. (12) Weld (Reseda luteola, natural order Resedaceæ), Europe. (13) Valonia (Quercus ægilops, natural order Cupuliferæ), Levant and Spain. (14) Madder Roots (Rubia tinctoria, natural order Rubiaceæ), Holland, France, Italy, Turkey, &c. (15) Sumac leaves (Rhus coriaria, natural order Anacardiaceæ), Sicily. (16) Extract of 15. (17) Quercitron bark (Quercus tinctoria, natural order Cupuliferæ), U. S. A. (18) Extract of 17. (19) Myrobolans (Terminalia chabula), India. (20) Gall Nuts (Quercus infectoria, natural order Cupuliferæ), Turkey and Levant. (21) Turmeric (Curcuma longa, natural order Zinziberaceæ), India, China, &c. (22) Persian Berries (Rhamnus alaternus, natural order Rhamnaceæ), Persia and Turkey. (23) Extract of 22. (24) Extract of 2 (Fustic). (25) Extract of 7 (Sapan). (26) Extract of 3 (Logwood). (27) Divi-Divi (Cæsalpinia coriaria, natural order Leguminosæ), S. America. (28) Cochineal (black), name of insect, Coccus Cacti; Mexico, Teneriffe, &c. (29) Cochineal (silver), name of insect, Coccus Cacti; Mexico, Teneriffe, &c.

D.—MATERIALS OF SOAP MANUFACTURE [Messrs. Gossage and Sons, Widnes]: Palm fruit, palm kernels, palm oil, Congo palm oil, palmnut oil, cocoanut oil. Cotton seeds (Egyptian), cotton seed oil. Rosin, tallow. Caustic soda, carbonate of soda, bicarbonate of soda, silicate of soda, alkaline solution of soda (100 degrees Tw.), silicate of soda, neutral, solution of ditto (75 degrees Tw.) Soap: Gold medal pale, prize medal blue mottled. Glycerine, extracted from spent soap dyes.

MATERIALS OF CANDLE MANUFACTURE [Price's Patent Candle Co., London]:—Raw palm oil, tallow, rough glycerine obtained from palm oil and tallow by lime saponification at high temperature; palm oil after acidification and distillation, material for composite candles, or for pressing for stearic acid; stearic acid hot pressed from preceding intermediate materials, soft fatty acids, obtained from pressing of preceding. Paraffin scale: Drained paraffin, the preceding freed from sand, and exposed to heat on a porous bed; semi-transparent paraffin, ready for candle-making; refined paraffin, the same finished with ivory black; blue oil, the heavy mineral oil expressed from paraffin scale; mineral lubricating oil, prepared from preceding by distillation and treatment with sulphuric acid and alkali; oleic acid, expressed from preceding; cloth oil, for wool scouring, prepared from preceding.

FOSSIL RESINS FOR VARNISH MANUFACTURE. [Messrs. Robt. Ingham, Clark, & Co., London.] "Animi," East Coast of Africa, shipped from Zanzibar. "Amber," shores of Baltic and Russian Lakes, also Japan. (Specimen of amber enclosing an insect). "Kauri," semi-fossil produce of coniferous tree, Dammaris Australis, New Zealand. "Mastic" exudation of Pistacia lentiscus, Isle of Chios. "Damar," exudation of D. Orientalis, shipped from Batavia and Singapore. Varieties of "Copal," *African;* "clouded in African mystery, both as regards sources of supply and trees that produce," and shipped from Accra and Lisbon; *Sierra Leone,* only shipped from that port, but obtained in beds of rivers, "foundation of all fine varnishes and of superiority of English varnishes all over the world;". *Benguela* and *Angola,* found in Central Africa. *Pebble Copal,* West Coast of Africa. *South American.*

E.—BREWING MATERIALS. Materials for Irish Stout and Whisky. [Messrs. John Plunkett and Co., Dublin.] Irish barley; pale malt, for brewing and distilling, made from ditto; patent crystallized malt; patent roasted barley; amber and brown malt; patent roasted malts, dark and medium; maize, prepared and roasted.

BEER BREWING SUBSTANCES. [Messrs. Boddington, Strangeways; Gatehouse and Yates, Ardwick; Mr. Worrall, Stockport.] Hops: "Canterbury Grapes" and "Goldings"; Worcestershire, 1880; Canadian; Bavarian. Malt. Saccharine used as substitute for malt.

SUGAR, AND ITS REFINING. [The Sankey Sugar Co.] Raw cane sugar, Peru, Jamaica, Manilla. 1st Process: Sugar melted with equal weight of water. 2nd Process: Liquor filtered through fine cotton bags; dirt thus removed, mites and other organic matter and soil; animal charcoal, for removing colour, &c., from sugar liquor; liquor after passing charcoal; sugar liquor boiled and crystallised; ditto pulverised.

F.—FLAX AND LINEN CASE. [The Island Spinning Company, Lisburn, Ireland]. Flax straw, flax-scutched, dressed flax: Courtrai, Irish, Dutch. Flax yarn in process of spinning, finished linen yarn and thread, finished linen yarn and thread dyed, bobbins of linen sewing thread, Macramé lace. Flax and hemp seeds, Canada. In frame over case, Specimens of Linen Manufacture, [The late Mr. Maurice Williams]. Linseed, flax flowers dried, flax straw, flax retted, flax scutched, flax prepared for spinning; Irish, Dutch, Russian, French, Belgian, Frisian flax. Linen yarns, different shades, grey, cream, bleached, dyed, &c. Woven linen: brown, mantle, diaper, ticking, damask, lawn, cambric, various drills, &c.; same bleached, dyed and printed.

G.—COTTON CASES. [Various donors] Cotton seeds: American, Indian, Fiji Cotton pods. Raw cottons: Peru (indigenous and anterior to Spanish Conquest), Fiji, British Guiana, American, Brazil, India, Egypt. (The following varieties are represented: Orleans, 14 qualities; Memphis, 4 qualities; Savannah, 6 qualities; Sea Island Cotton; Brazil; Indian, 4 qualities; Egyptian, 5 qualities.) Spinning and Weaving Processes: (1) Raw cotton, (2) same after going through opening machine, (3) after finishing lap machine, (3a) droppings from lap machine, (4) after carding engine, (4a) fly waste from 4, (5) after drawing frame, (6) after slubbing, (7) after intermediate frame, (8) after throstle spinning frame, (9-11) twist, reeled, dyed indigo, dyed turkey red. Specimens of yarn, warp sized, weft, cloth.—Native Mysore cloth. [Mr. Sowerbutts, F.R.G.S.]

H.—SILK CASE, in four divisions: Division I. Italian silk. Development of the silk-worm (Bombyx Mori); eggs; cocoons on bush and opened; leaves of mulberry; silkworm moth; "silkworm gut," for fishing lines; "Strusa," or waste silk; hanks of raw silk of various shades; Italian, Japanese, Chinese, raw, organzine, and tram silks. [Miss M. L. Casartelli, and others.]

Division II. Indian silk: Cocoons of Bombyx Mori, Madrassee "ovened" or artificially dried; Madrassee, sun-dried; Desi, or November bund cocoons, sun-dried; Burmah cocoons; Desi pierced cocoons; hanks of Indian silk. [Messrs. Matheson & Co., London.]

Divison III. Bengal silk: Very fine raw silk reeled in the usual Bengal method, from (1) Gonatea, (2) Cossimbazar, (3) Rangamati, (4) Benjeti. [Messrs. Anderson Bros., London, agents for the Bengal Silk Company, Behrampore.]

Division IV. Tusser silks: Cocoons and moth of the Tusser silkworm (Antheræa mylitta); cocoons of the Tusser silkworm opened; reels of Tusser silk. Cocoons of Tricula trifenestrata, India; of Saturnia Faidherbi, Gambia, West Africa. [Messrs. Matheson & Co.]

K.—Illustrations of the Thomas Gilchrist or Basic Process of Steel-making [Percy Gilchrist, Esq.] All these very fine specimens are knotted, twisted, bent, folded, punched, &c., cold.

L.—Illustrations of Cutlery Making [G. Gadd, Esq.] Other metals.

M.—Alum Octahedra [Messrs. Peter Spence and Sons, Manchester.]

N.—Victoria, Australia. Collection of products presented by the Colonial Commissioners at the Paris Exhibition (1878), and the London Colonial Exhibition (1886). Wool—Fleeces (ewe and lamb) greasy and washed, from various estates. Fuller's teasels (Dipsacus fullonum) for wool cleaning. Grains, pulse, &c. Peas, beans, lucerne, sorghum, "poor man's tea," hops, maize, wheat, oats, barley, rye, canary seed, &c. Gold—Facsimile of the celebrated Welcome Nugget (Ballarat, June 11, 1858, gross weight, 2,195 oz.); models of gold cake, Bendigo (now Sandhurst), weighing respectively 1,050, 714, and 3,868 oz. Models of fruit (see case GG). Woods (see case U, also floor of museum).

O.—Canada. Products presented by the Commissioners at the Paris Exhibition, 1878. Grains and pulse: Oats, wheat, barley, maize, peas, beans, vetch, millet, buckwheat. Seeds: Flax, clover, grasses, onion, mangel-wurzel, beet, cucumber, melon, squash, carrot, turnips, tomato, parsnips. Case at side with ears of cereals. Toronto.

P.—West Africa. [Presented by Sir James Marshall, C.M.G., Commissioner, Colonial Exhibition, 1886.] *Sierra Leone;* Maize, Guinea corn; probo or 'gperegun' fibre; coffee; palm nuts; Physii nuts (Iatropha curcas); gum; rice; in husk and cleaned; cotton of "silk cotton tree;" maluka seed; indigo; ginger; agoussie, or cogee; tingee, or soosoo ball grain; cinnamon, "Ambeck;" chillies; cocoa-nut fibre; rice; benni-seed. *Gold Coast*: Cotton, "silk cotton" and pod; lor fibre; fruit of the doom palm; ginger, raw; kola nuts. *Lagos:* Cocoa, ogea gum, shea butter seeds. *Gambia:* Ella (fruit of the doom palm), vegetable sponge (Luffa Ægyptiaca), castor-oil seeds (Ricinus communis), pods of faftan, or silk-down tree (Asclepias gigantea), Santong gum, ground nuts (Arachis hypogæa), homhom seed; Denbick notch seed; silk cocoons of Saturnia Faidherbi; grains for red ink, coorie seeds (Bonducella bonduc).

P^2.—(Cases opposite.) Gold Coast: Calabar beans (deadly poison), Indiarubber, native broom. Gambia: "Snake's eyes" (Abrus precatorius), never-die seeds, handar-bark (medicinal), bamboo fibre, native water bottle, made of leaf. Lagos: Medicinal plant. Sierra Leone: Coranko, for yellow dye, palm fruit. Upper Binué, or Tchadda river, a tributary of Niger: Gum Arabic. (See also case CC.)

Q.—Montserrat, West Indies: Lime fruit and products [Messrs. Evans, Sons and Co., Liverpool]: Limes; juice squeezed, juice racked, juice filtered, lime fruit juice, various cordials made from same, bitters, sauce, fruit tablets.

R.—Fiji [Presented by the Fiji Commissioner at the Colonial Exhibition, 1886]: Coffee, preserved fruit, sugar, raw, crystallised, powdered (Mango Island), chillies, arrowroot, soja bean, croton oil seed, cayenne, turmeric, "paddy" or rice husks, for paper making, tea (broken pekoe), ivory nuts, dilo nuts, nutmeg starch, tapioca.

R^2. (opposite)—Tobacco, native cured and European cured; cinchona bark; yogona or kava; bêche de mer, or edible sea slug; candle-nuts; candle-nuts, shelled; wild tamarinds; copra, or broken cocoa-nuts; dilo nuts (Catophyllum); cocoa-nut fibre, coarse and fine; cotton seeds; cotton, raw; tea (pekoe); coffee; maize fleece of Angora goat.

S.—British Guiana. [Presented by the Colonial Commissioner, Colonial Exhibition, 1886.] Dried plantains or banana, cocoa, cotton, dried orange peel, ochre, white cocoa, cocoa-nut oil, isinglass, sand (from river Corentyn), cassava dried and sliced, cassava bread, cassava starch, cassareep, Mannuca Americana, copaiva balsam, dried dwarf banana, sugars, molasses, rices, coffee, castor-oil seed, macuma seed.

S^{2} (Opposite).—Greenheart seeds, ditto wood, trooly-nuts, swimming bladder of Silurus Parkerii, isinglass made from ditto.

Peru. [Mr. George Pool, Arequipa.] Varieties of llama wool, yucca an edible root, cascarilla or Peruvian bark, ají (chillies), leaves of coca (Erythoxylon coca), the source of cocaïne; seeds of quinquina (calisaya), seeds of cocoa (cacao), guano.

T.—Indian Grains and Oil-Seeds. [Late Rev. J. A. Silva.] Rice; wheat; millets, viz., bajri, sawi, ragi, jawari, kungoni; peas, dhall grains, moong, black and green; oil seeds, *e.g.*, pundi, castor-oil (awudla), sisamam, till, kusambha, linseed, ground nuts, marking nuts.

U.—Woods. West Indian. [Rev. H. O. Chipp.] Seagrape, Spanish elm, guango candlewood, grey sanders, white fork, calabash.

Australian. [Commissioner for Victoria, Colonial Exhibition, 1886.] Acacias (A. verticillata, A. calamifolia, A. implexa), she oak (Casuarina tuberosa), Eucalyptus fissilis, Hakea acicularis, H. pugioniformis, Melaleuca decassata, Oxylobium callistachys, Syncarpia laurifolia; specimens from Northern Territory, &c.

V.—Various Mineral Cases, including (1) case of Irish marbles [Messrs. John Miller and Son, Galway], (2) cases of Chilian iron ores and copper ores [Archbishop of Santiago, Chile], (3) Chilian crystals (do.), polished stone.

W.—Various Vegetable Products. Mangy-mangy cocoa-nut (Fiji), yams (Fiji, Sierra Leone), Maize (U.S.A.), "Botany Bay harz" (Xanthorrhea arborea, New South Wales), cob of Brazil nuts (Bertholletia excelsa, South America), Corozo nuts or "vegetable ivory" (South America), seeds of indiarubber tree (Bolivia), pod of Stropanthus rombé (Nyassa region, East Africa), cone of tree fern (New Zealand) &c. [Various donors.]

X.—Various Vegetable Products. Collections of medicinal, &c., plants [Mr. E. Somers, M.R.C.S.. &c.], tobacco, camphor, ears of cereals, &c.

Y.—Ethnography—Old World. Turkey and Egypt: Juniper stem of pipe; fez (battle of Tel-el-Kebir), embroidered slippers, Mohammedan rosary. India and Ceylon: brass idol, silver statuettes of Buddha, sugarcane cutters, Parsi wood and incense. Persia: Specimens of MSS. China: Metal dice, drinking gourd, hand-painted silk, fans, MS. letters, printed book (treatise on music), specimens of paper, paper pocket handkerchiefs, playing cards. Japan: Fan-dagger, paper. Africa: "Manillas," formerly used as money; Zulu armlets, locust egg cases and grubs, Calabash (W. Coast), Ashanti brass figures. (See also case CC.) Above case on wall: Large Chinese fan, stick of tea wood, Malacca canes, carved bamboo stick (Japan), Zulu "love shield," elephant hunting spear (S. Africa), &c.

Z.—Ethnography—New World. Brazil: Strings of shells, model of "jangada," or boat. Mexico: Native models of Indians [Mr. E. de la Torre], objects made by Indians. Bolivia: Indian head-dress of feathers, teeth necklace, berry necklace, Indian comb, stone axe heads. [Mr. Oyola.] Nicaragua: Objects in baked clay made by Indians, small calabash. [Mr. Lacayo.] Peru: Woven and knitted figures. [Mr. G. Pool.] Central America: Carved calabash, Panama or cabbage tree hat. West Indies: Objects in bamboo and seaweed, sugarcane cutter. North America: Indian mocassins (U.S.A.), birch-bark boat (Nova Scotia), relics of Greeley Relief Expedition, 1883. [Mr. C. O'N. Conroy.] Australia: Emu eggs carved by natives, with indigenous animals and birds [Mr. J. McQuade]; native idol. New Zealand: Plants growing out of bodies of caterpillars (Nikitapu bush); pure sulphur and twigs covered with silica [Mr. Corry]; gold dust. Fiji: Cocoanut fibre fans, shell armlet. Samoa: Native comb, kava or yangona; native whistle. [Rev. J. Vaughan.] On wall above: Samoa bows and arrows; Canadian snow-shoes; Mexican hammock, made of henequen fibre (Agave sisalana) from Yucatan. [Mr. J. M. Ponce.]

AA.—JAPAN. (1) Pictures on "Japanese crape." (2) Native prints illustrating native industries and mechanical arts, viz., rice-culture, five scenes; silk industry, three scenes; building and carpentry, eight scenes; loom, smithy, mechanical process, fifteen illustrations.

BB.—ETHNOGRAPHICAL.—Various. Malay Peninsula: Malay sarong (garment), and Kris (dagger). [Mr. H. Collinge.] Australia: Grass mat. [Rev. J. Vaughan.] Brazil: Complete costume and trappings of vaqueiro, or cattle driver. [Mr. de Cerqueira Lima.] Argentine Republic: Trappings of Gaucho hunter.

CC.—ETHNOGRAPHICAL.—Various. Lagos, West Africa: Grass mat. Upper Niger: Grass mat. Sierra Leone: Fibre. Gold Coast: Bark fibre. [All presented by Sir J. Marshall.] Afghanistan: Native embroidery. Turkey: Embroidered slippers.

DD.—Collection of Italian butterflies. Caught, arranged, and presented by Rev. J. Rowan.

EE.—Indian butterflies and moths. [Mr. T. M. Walsh].

FF.—Models of Indian fruits, Madras. [Mr. H. Collinge].

GG.—Models of Victorian fruits. [Colonial Commissioners, Paris Exhibition, 1877].

LIST OF GEOGRAPHICAL BOOKS (TALBOT BEQUEST) IN BOOKCASES OF THE MUSEUM.

(These Works in for the use of Professors; there are also a number of books of Travel, &c., in the Students' Library.)

Levasseur's Géographie Commerciale and Atlas.
Bainier. Cours de Géographie Commerciale. 2 vols.
André. Geographie des Welthandels. 3 vols.
Yeats. Works on Commerce. 4 vols.
Geography in All Ages. 1832.
Class Books of Geography. Hughes, &c.
Geographical Readers. Philips, Blackwood, &c.
Bouffard. Historie Générale du Monde. 3 vols.
Maury. La Terre et l'Homme.
Maury. Géographie.
Bevan's Primers of Industrial Geography. 3 vols.
Page's Physical Geography.
Page's Geology.
Malte-Brun. System of Geography.
Phillips. Geography of the Ocean.
Student's Modern Geography. (Smith.)
V. de St. Martin. L' Année Géographique. 17 vols. (1863-77.)
Pietro della Valle, Viaggi. 2 vols. (1843.)
Tavernier. Voyages. (Paris, 1678.) 2 vols.
Chardin. Voyages en Perse. 10 vols, (Paris, 1811.)
P. Labat. Voyages. 8 vols. (Paris, 1742.)
Ptolomæi Geographia. 3 vols. (Lipsiæ.)
Strabo. Rerum Geograph. 3 vols. (Lipsiæ.)
Strabo. Translation by Falconer and Hamilton. 3 vols. (Bohn.)
Humboldt. Travels. 3 vols. (Bohn.)
Humboldt. Géographie. 5 vols. (Paris.)
Bodham-Whetham. Roraima and British Guiana.
Bodham-Whetham. Across Central America.
Townshend. Wild Life in Florida.
De Verteuil. Trinidad.
Breen. St. Lucia.
Climate, Geology, and Fauna of Brazil.
Mathews. Up the Amazon and Maderia Rivers.
Bates. The Naturalist on the Amazons.
Domenech. Deserts of North America. 2 vols.
Whymper. Alaska.
Northern Coasts of America and Hudson's Bay.

Roux de Rochelle. Etats Unis.
De Rienzi. Océanie. 2 vols.
Captain Cook. Life and Voyages.
Brassey. Voyage in the Sunbeam.
Micmie. Siberian Overland Route.
Barrow. Arctic Voyages.
McClintock. Fate of Sir John Franklin.
Hewitt. Geography of the British Colonies.
Gill. Geography of the British Colonies.
Her Majesty's Colonies.
Bonwick. British Colonies and Resources.
Colonial and Indian Exhibition, 1886: Catalogues and Handbooks and Official Publications,* mostly presented by the Commissioners of the various Colonies, and referring to:—

- CEYLON: Handbook and Catalogue of Court.
- CYPRUS: Catalogue of Court.
- MALTA: Malta and its Industries. By Dr. Zammit.
- WEST AFRICA: Handbook to the Court.
- CAPE OF GOOD HOPE: Official Handbook.
- NATAL: Official Handbook.
- WEST INDIES: The Western Indian Court.
  - Trinidad as a Field for Emigration.
- BRITISH GUIANA: Special Catalogue.
- FIJI: Handbook to Exhibits.
- QUEENSLAND: Catalogue of Exhibits.
  - Queensland, its Resources and Institutions: Essays.
- VICTORIA: Illustrated Handbook.
  - Victorian Year-Book (several years).
  - Catalogue of Exhibits.
  - Descriptive Catalogue of Minerals.
  - The Land Act of 1869.
  - Royal Commission on Vegetable Products.
  - Homes and Homesteads in the Land of Plenty.
  - Extra-Tropical Plants. By Mueller.
  - Indigenous Vegetation of Australia.
- NEW ZEALAND:
  - Official Handbook (two editions).
  - Handbook of New Zealand, by Hector.
  - Catalogue of Exhibits.
  - Catalogue of Geological Exhibits.
  - Geological Survey Reports, 6 vols.
  - Meteorological Report.
  - New Zealand and the South Sea Islands. By Vogel.
  - New Zealand: A Field for Emigration. By Pennefeather.
- CANADA:
  - Government Guide Book to Canada.
  - Canada, its History and Production. By Hon. J. Carling.
  - Catalogue of Economic Minerals.
  - Canadian Forests and Trees. By Small.
  - Across Canada. By Fream.
  - Guide du Colon Français au Canada.
  - Canada at the Colonial and International Exhibition.
  - New Brunswick, its Resources and Progress.
  - Nova Scotia: Information for Settlers; do. the Crops.
  - Manitoba and the North-West.
  - The North-West and British Columbia. By Lord Landsdowne.
  - The Great North-West Prairie Lands. By Spence.
  - Sport in the North-West. By Hubbard.
  - Ontario as a Home for the British Farmer. Pictorial Ontario.

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* Many of these are merely pamphlets.

Official Educational Reports: Quebec (Rapport du Surintendant de l'Instruction Publique; Questions de Concours; Exposition Scolaire). New Brunswick (Annual Report). Nova Scotia (Annual Report). Manitoba (Mémoire par la Section Catholique du Bureau d'Education; Report of the Protestant Schools).
Emigrants' Information Office: Publications; Circulars for various Colonies.
Terry. Reminiscences of New South Wales and Victoria.
Reid. Essay on New South Wales.
Harcus. South Australia.
Trollope. South and West Australia.
Raffle. History of Java, 2 vols.
Stone. Five Months in New Guinea.
Wallace. Malay Archipelago, 2 vols.
Tennent. Natural History of Ceylon.
Vambéry. Central Asia.
Burnaby. Ride to Khiva.
Burnaby. On Horseback through Asia Minor.
Capper. The Three Presidencies of India.
Blakiston. The Yang-Tsze.
Mouhot. Travels in Indo-China, 2 vols.
Bickmore. Travels in the East-Indian Archipelago.
Ferrier. Caravan Journeys.
Des Vorges. L'Arabie.
Gentil. Memoires sur l'Indoustan.
Steinmetz. Japan and its People.
Cooke. China in 1857-8.
Huc. Voyage dans la Tartarie et Tibet, 2 vols.
Huc. L'Empire Chinois, 2 vols.
Huc. Le Christianisme en Chine, 4 vols.
Longman's "Travellers' Library," embracing Huc's Travels, Buxton's Mexico, Head's Pampas, Edward's Amazon, Heber's Indian Journals (2 vols.), Malcolm's Sketches of Persia, Hay's Western Barbary, St. John's Libyan Desert, Ripa's Court of Pekin.
Hamilton. Wanderings in North Africa.
Lady Herbert. Algeria.
Lady Herbert. Cradle Lands.
Charmes. Five Months in Egypt.
Blandford's Geology and Zoology of Abyssinia.
Beke. British Captives in Abyssinia.
Hozier. Expedition to Abyssinia.
Parkin's Life in Abyssinia.
Tardieu, &c. Sénégambie, Nubie, &c.
Elton. Lakes and Mountains of Africa.
Cameron. Across Africa.
Kerr. The Far Interior, 2 vols.
Stanley. Through the Dark Continent, 2 vols.
Cumming. Lion Hunter in South Africa.
Livingstone. South Africa.
Baker. Nile Tributaries.
Baker. Ismaïlïa. 2 vols.
Baker. Albert Nyanza.
Speke. Discovery of Sources of Nile.
Du Chaillu. Ashango Land.
Du Chaillu. Adventures in Equatorial Africa.
Morier's Journey through Persia.
Morier's Second Journey through Persia.
Humbert. Le Japon Illustré.
Garnier. L'Indo-Chine.
Moray. L'Amérique du Sud, 2 vols.
Harris. Wild Sports of South Africa.
Williamson's Oriental Field Sports, 2 vols.
Imperial Gazetteer, 2 vols.
Index Geographicus. Keith Johnston.
Thornton. Gazetteer of India.

Catlins. North American Indian. 2 vols.
Cooper. Pioneers of Commerce.
Atlases: Keith Johnston's Royal (1878), Cox's General, Blackie's Comprehensive, Johnston's Physical, Maury's Atlas of the Sea, Bevan's Relief, Bevan's Statistical, Putzger's Gymnasial, Spruner's Atlas Antiquus, Andriveau's Atlas Universal, Dien's Atlas Cœleste.
Pictures: Vogel's New Zealand Album of Photographs: Egypt, Syria, Granada.

LIST OF CARDS OF THE "MUSÉE SCOLAIRE,"

Published in Paris and Brussels, and arranged in the Corridors.

*The cards marked * have actual objects, and are in glass cases. The rest have illustrations only. The explanations are in French.*

Nos. 1-18. Natural History.
*19, 20. Minerals.
21-26. Elements of Agriculture.
*27. Food Plants: Pulse.
*28. Tea, Coffee, and Cocoa.
*29, 30. Cereals, Flour, and Bread.
*31. Spices.
*32. Sugar.
*33-34. Oil Plants.
*35, 36. Dye Plants.
*37. Flax and Linen.
*38. Hemp.
*39. Cotton.
*40, 41. Gums and Resins.
*42-49. Industrial Woods.
50, 51. Poisonous Plants.
52, 53. Edible and Poisonous Mushrooms.
82-86. Injurious Insects.
87. The Bee.
*88. The Silkworm.
89. A Drop of Water with Infusoria.
91. Crustaceans.
92. Fish.
93. Reptiles.
94. The Fowl: Development of the Chick.
95-98. Birds.
99-106. Mammals.

*54. Paper Making.
*56-58. Coal and its Products.
*60-62. Iron and its Manufacture
*63. Steel.
*64, 65. Zinc.
*67. Lead.
*68. Bricks and Pottery.
*70, 71. Porcelain.
72. Glass.
*73-77. Industrial Minerals.
*78. Tanning.
*80. Weaving.
*81, 82. Textile Hairs and Wools.

HUNDREDTH MEETING

Of the Society, held in the Library, on Wednesday, June 26th, at 7-30 p.m.; Mr. H. Yule, Oldham, in the chair.

The minutes of meetings held May 29th (97), June 5th (98), and 22nd (99) having been read and approved, the election of the following members was announced:—

Ordinary: Messrs. Ralph Bagley, John Dyson, A. Haworth, J. Hoyle Todd, and William Wilkinson.

The following presentations were announced:—

Mr. C. Roeder: Further Remarks on the Oxford Street Section.

Mr. J. E. M. Vincent: The Australian Irrigation Colonies (illustrated).

Councillor McDougall: Inquiries into the Causes of Poverty. Further ditto ditto. Drink and Poverty.

The *Alliance News:* Two copies of Drink Map of Manchester.

M. Tondini de Quarenghi: Progress of the Questions of Unification of Time and Prime Meridian.

Councillor W. Sherratt: 7 vols. Annual Reports on the Boston (U.S.A.) Water Supply, 5 vols. Annual Reports of the Cochituate Water Board. 8 vols. Report of City (Boston) Engineer. Report on the Additional Water Supply. Report on the Impurity of Water. Report on the Prevention of Floods. Description of Boston Main Drainage Works. Ditto (brief). Description of Boston Waterworks. Two Reports on Boston Parks. Portraits, maps, views, sections, &c.

Mr. Bryden, Harrisburg, by Mr. Bramwell: Eleven Reports of the Commonwealth of Pennsylvania, fully illustrated with tables, views, plans of coalmines, &c.

The SECRETARY made announcements in reference to the excursions of the Society in June, July, and August.

The death of Mr. W. A. Beith and the resolution of the Council thereon having been announced, Mr. G. Beith's reply, as follows, was read:—

"Glasgow, 25th June, 1889.

"My Dear Sir,—Will you kindly convey to the Council of the Manchester Geographical Society, and to the mover and seconder of the resolution you sent me, my heartfelt thanks and gratitude for this formal expression of their kind sympathy with me and my family. It is most comforting to us all that so important a body of gentlemen should pass with much sympathy this very kind resolution unanimously. To the eye of sight the case is as sad as it well can be."

The following papers were then read: "In Mashona Land," by Mr. F. C. Selous, read by Mr. GRINDLEY. "The Snowline of the Tatra Mountains," (see pp. 198-201) by Karl Grissinger, translated and read by Mr. F. ZIMMERN.

HUNDRED AND FIRST MEETING

Of the Society, held on Saturday, June 29th, 1889, at 3 o'clock p.m., for the purpose of visiting the General Post Office, Brown Street.

Mr. R. W. Johnston and his assistants received about sixty members, and took them through the building, explaining the working of the letter and newspaper departments, and the electrical and pneumatic departments. The members present on this occasion were delighted with their visit, and were very much surprised to see the perfection to which the work of the Post Office has been brought.

Very hearty votes of thanks were given to the Postmaster and his assistants for their kindness and the great trouble they had taken in showing the working of this great Government department.

Commercial Geography in Preston.—In a previous number of the Journal we drew attention to the fact that a course of lectures on this subject was being delivered in Preston by Mr. Cardwell, of St. Bede's College, Alexandra Park. From the accounts appearing in the local papers, we find that the countries dealt with after Christmas were Great Britain, France, Germany, and the United States. From these same summaries we also get some idea of the method of teaching adopted in the lectures, which appear to have been conducted in a scientific, philosophical, and practical manner. Practical, in that actual specimens of the various products of commerce in their threefold aspect—as raw materials, as materials in the progress of manufacture and as finished goods were shown whenever their names or the localities where they are produced were mentioned. Scientific, in that a student, after working through one country by the method here adopted, would, by a reference to the physical geography and geology of any other country, at once be able to infer, with tolerable correctness, the character of the economical geography and present economic state of the new country referred to. Philosophically, in that particular attention was devoted to bringing out just those points in connection with the history of commerce of each country for which the special circumstances of its geography best adapted it. Thus, in connection with Great Britain, there was traced out the rise and development of our commercial supremacy, whilst France, Germany and the United States were dealt with as our great industrial and commercial rivals. France was also dealt with as an agricultural country, being contrasted, from an economical point of view, with Great Britain, a manufacturing and mining one, whilst Germany illustrated the advantages and disadvantages of such commercial combinations as the old Hanse League and modern Zollverein, with special reference to the federation of the British empire; the United States being specially studied as our provider, best customer, and greatest rival. We have drawn attention to these lectures at some length for the benefit of members, since Mr. Cardwell is about to give a similar course at the Manchester Technical School during the next winter.

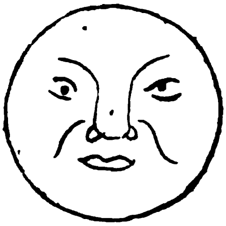
The Cañon of the Tarn in South Central France.—We read in the new edition of Murray's "Handbook of France" (1888) the following interesting description of a region of cañons in Central France, access to which has only recently been made practicable by the opening of a new line of railway. The region is that of Les Causses, a tableland rising 3,000 feet and upwards above the sea-level in the Departments of La Lozère and Aveyron. The upper surface of this high plateau presents nothing but nude dry rocks entirely destitute of water, standing or running, but its striking and peculiar feature is the number of deep ravines which traverse it, with vertical sides 400 to 600 metres deep. The chief of these gorges is that of the Tarn, which runs through it at the botton of a cañon resembling those of the Colorado, but on a smaller scale. The Tarnon, the Jonte, the Dourbie, and the Fraissinet also pass through cañons, which fissure it in various directions. The cañon of the Tarn, however, has a length of 31 miles, during the whole of which not a single streamlet or torrent enters, but it is fed by twenty-five to thirty voluminous fountains, gushing out at the foot of the high cliffs which bound it, those on the right or north being the escarpment of the Causse Méjean, on the left, and the Causse Sauveterre on the right. Where the Tarn enters the gorge it is an insignificant stream, nearly dried up during four or five months of the year. At its outlet it is a large, copious, and never-failing river. The cause of this phenomenon is thus explained. Every drop of rain which falls upon the surface of the Causses above sinks at once into the ground, and filters through the pervious strata of jurassic limestone until arrested by the subjacent beds of the lias at the level of the bed of the Tarn. The grandeur and picturesqueness of these deep and narrow gorges is augmented and varied by the singular character of the dolomite rocks which crown the precipitous walls.—*From Proceedings Royal Geographical Society.*

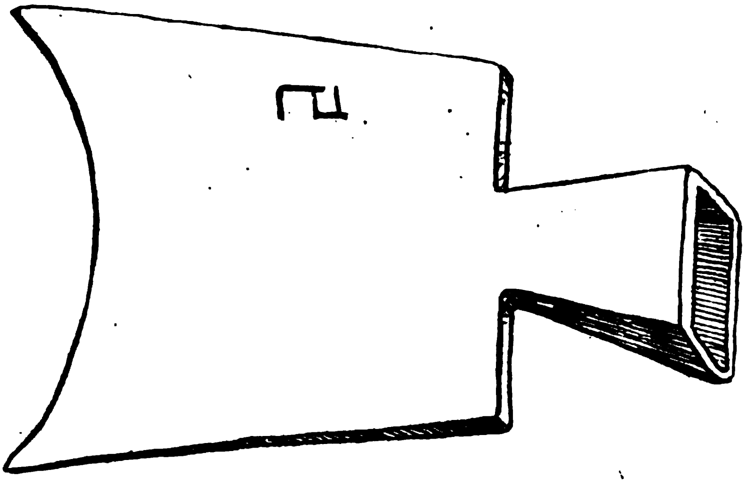
The Population of Morocco.—From a new investigation as to the population of Morocco, published in the *Réveil du Maroc*, we obtain the following results. First, as to races: Berbers and Tuaregs, 3,000,000; Shella Berbers, 2,200,000; Arabs (1), pure Nomadic Bedouins, 700,000; (2) Mixed, 3,000,000; Jews, 150,000; Negroes, 200,000; total, 9,250,000. As to regions, the population is distributed as follows:—

The region of the old kingdom of Fez	3,200,000
Ditto of Morocco	3,900,000
Ditto of Tafilet and the Segelmesa country	850,000
Ditto of Sus, Adrar, and the Northern Draa	1,450,000
Total	9,400,000

From Proceedings Royal Geographical Society.

CHINESE COINS PLATE 1





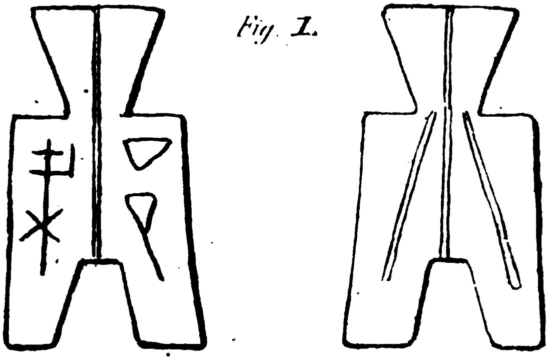


Fig. 1.

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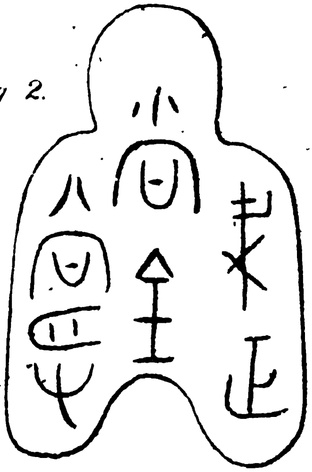
CHINESE COINS PLATE 2

Fig 2.



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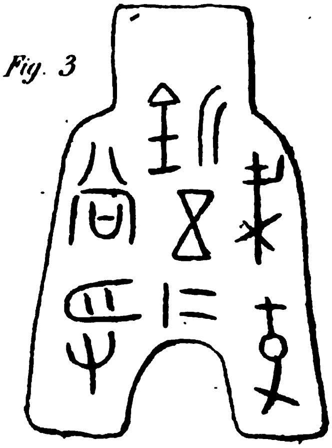

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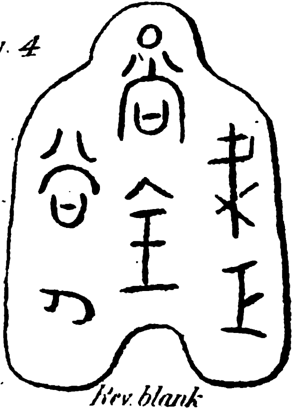

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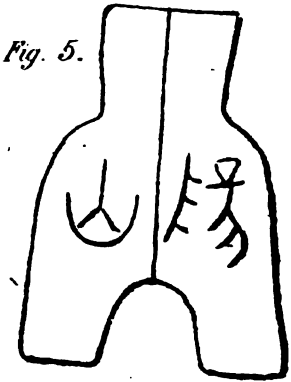

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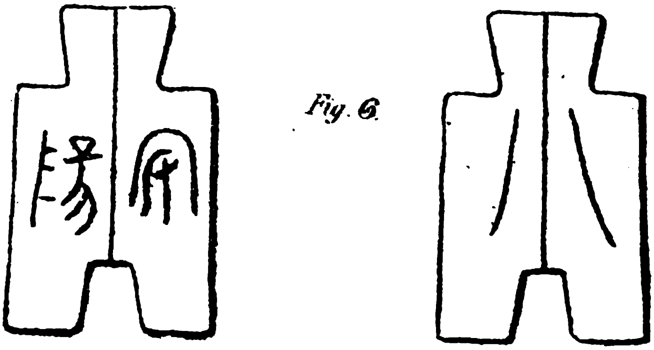

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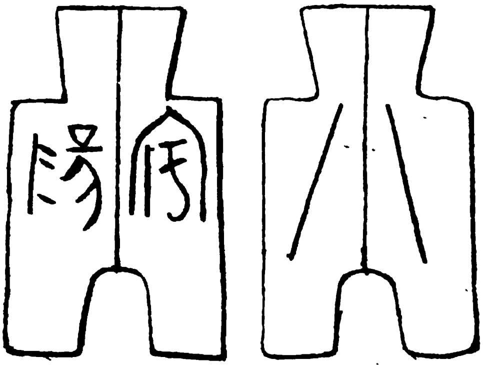
CHINESE COINS PLATE 3

Fig. 7.



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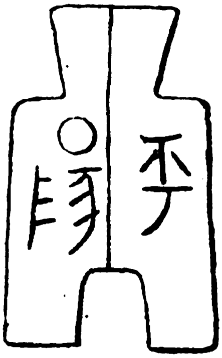

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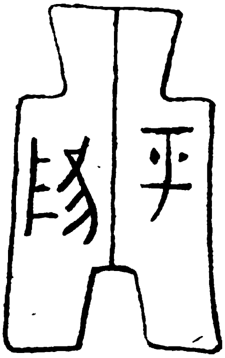

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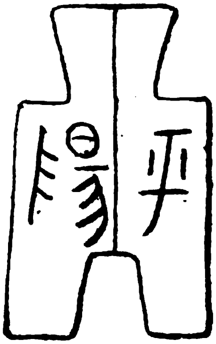

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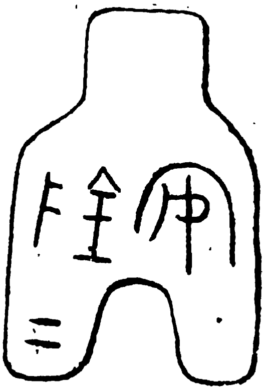

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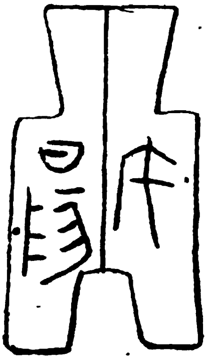

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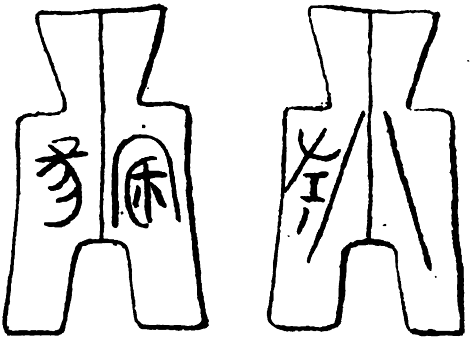

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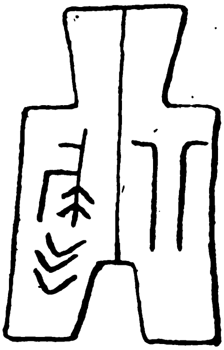

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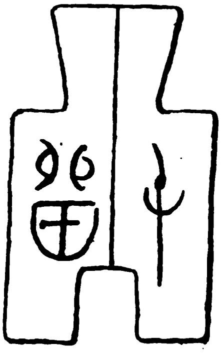

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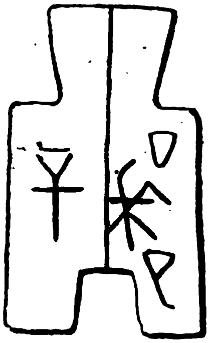

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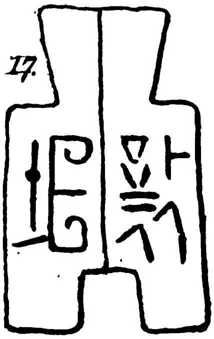

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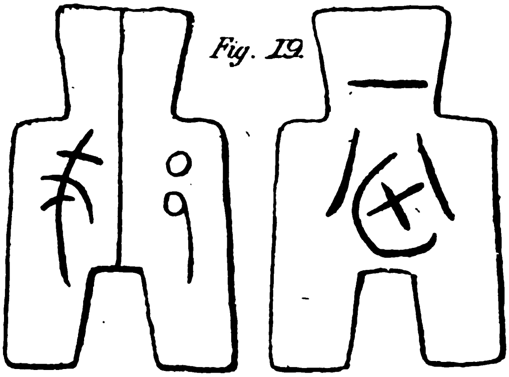

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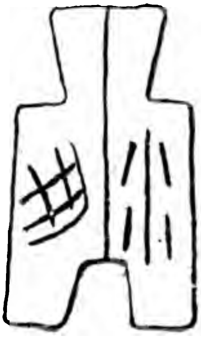

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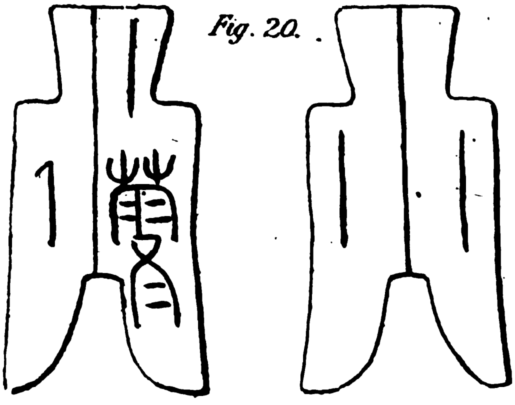

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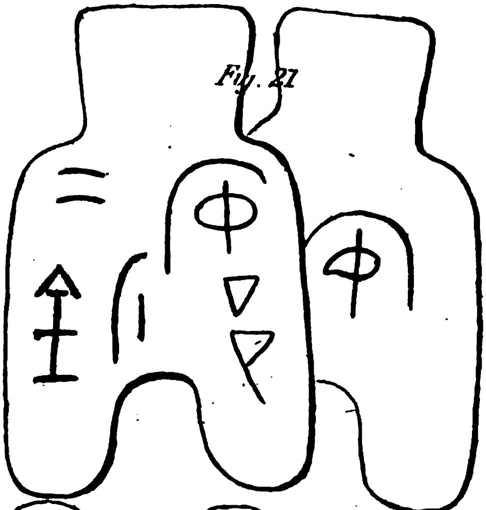
CHINESE COINS PLATE 5



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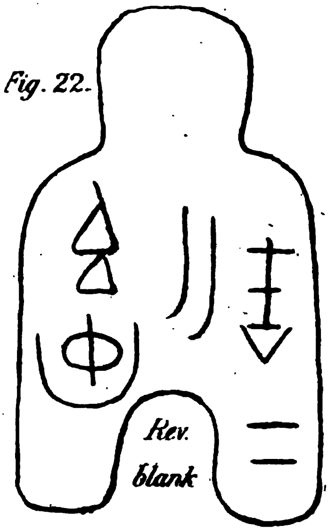

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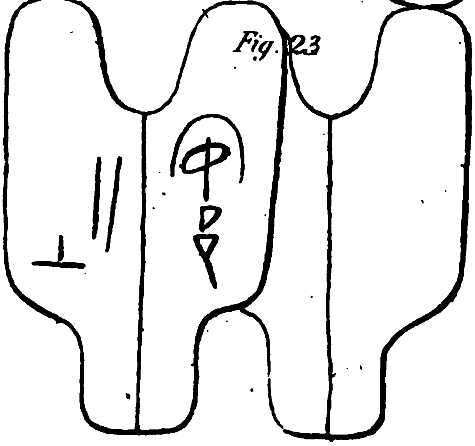

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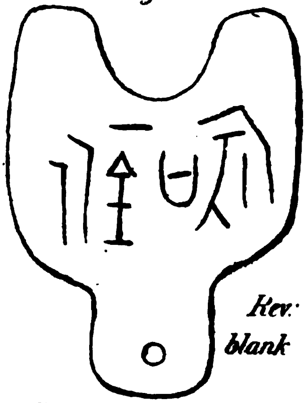

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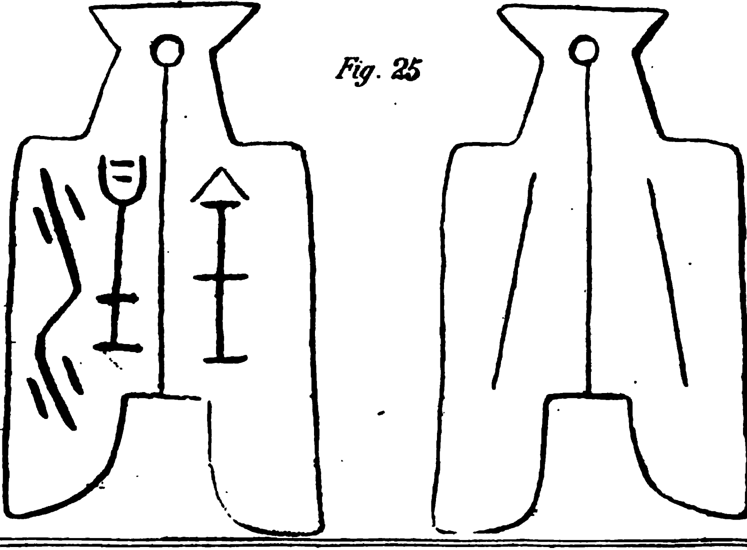

Fig. 25

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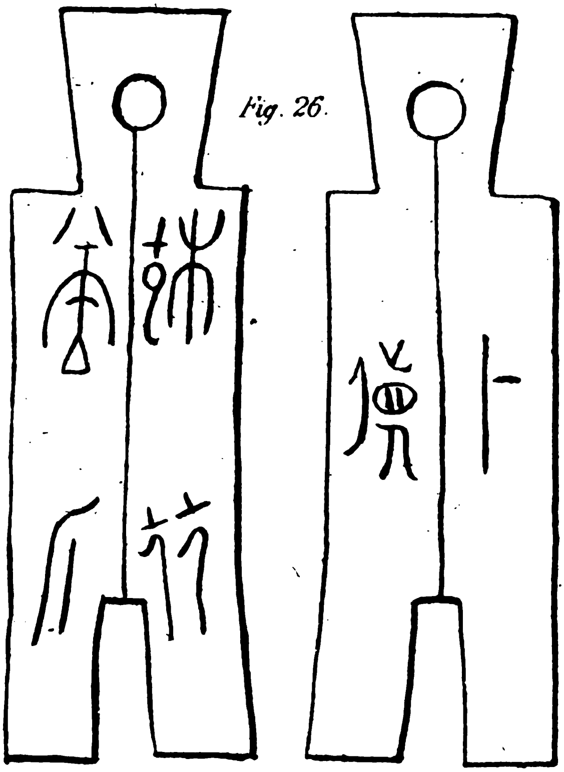

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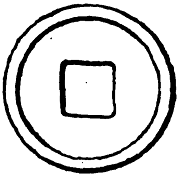

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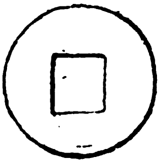

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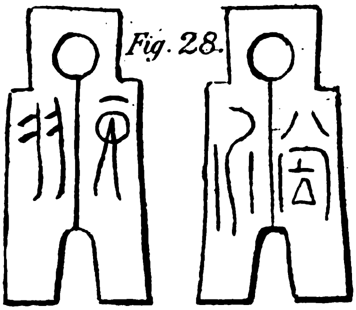

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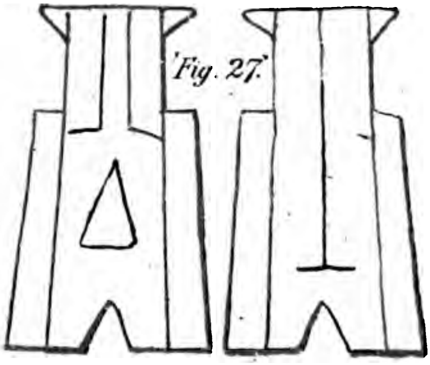

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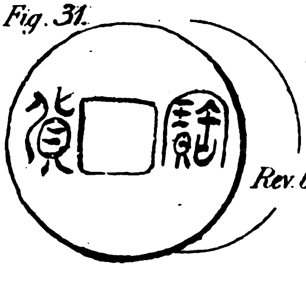

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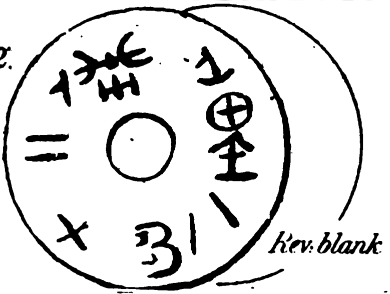

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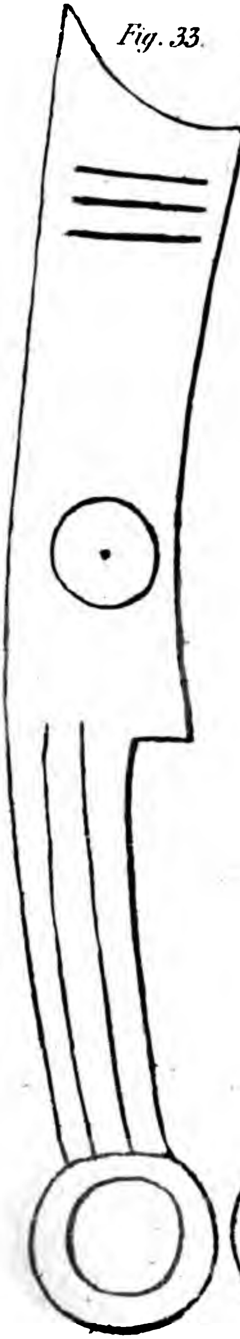

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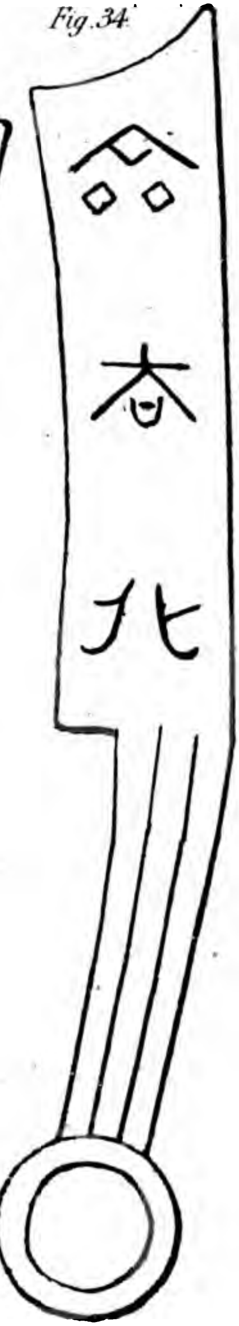

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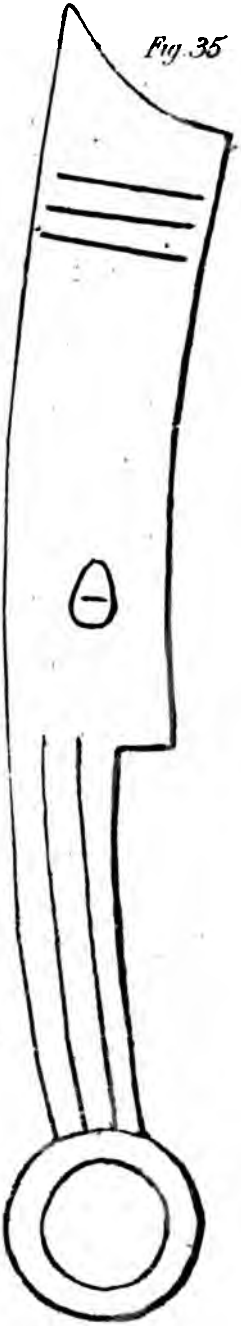

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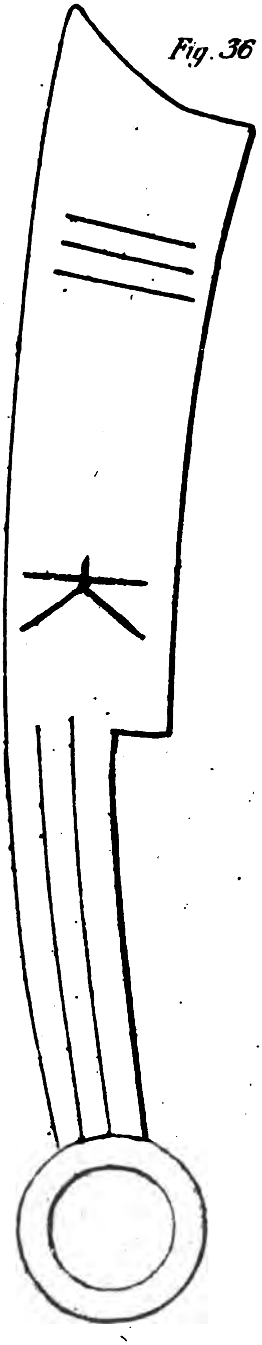
Fig. 36



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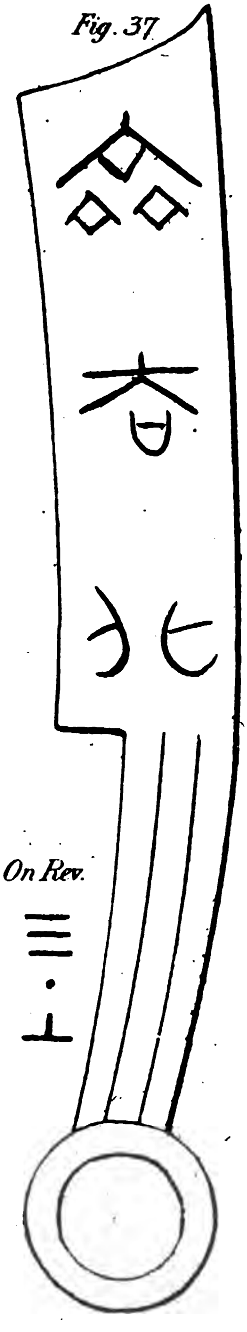

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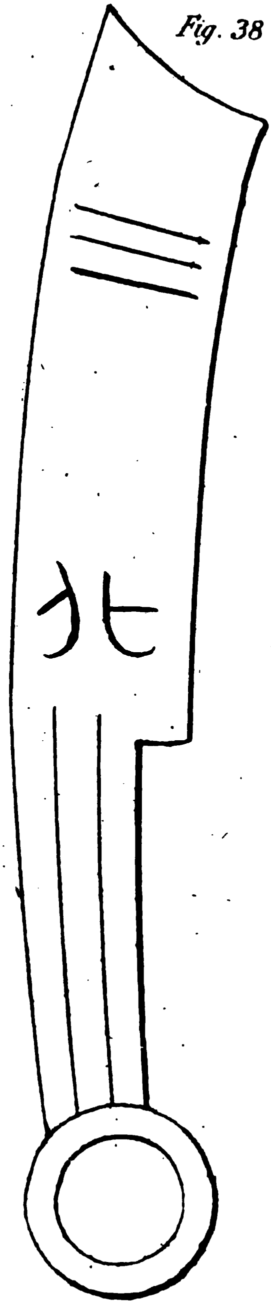
Fig. 38



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CHINESE COINS PLATE 9

Fig. 39

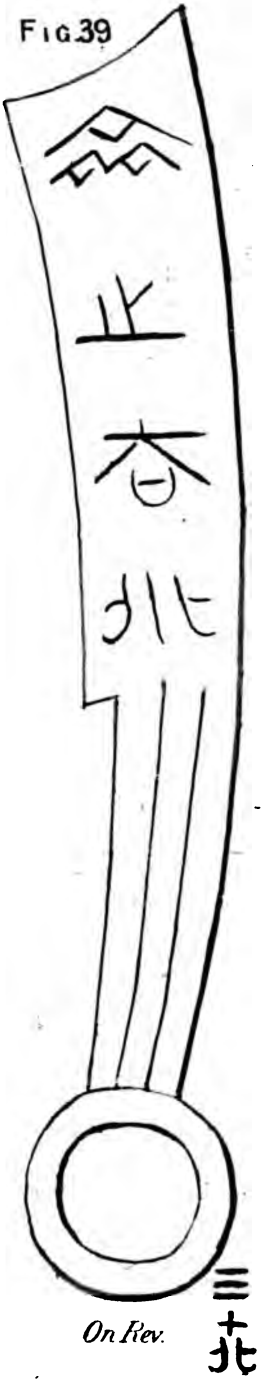

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Fig. 40

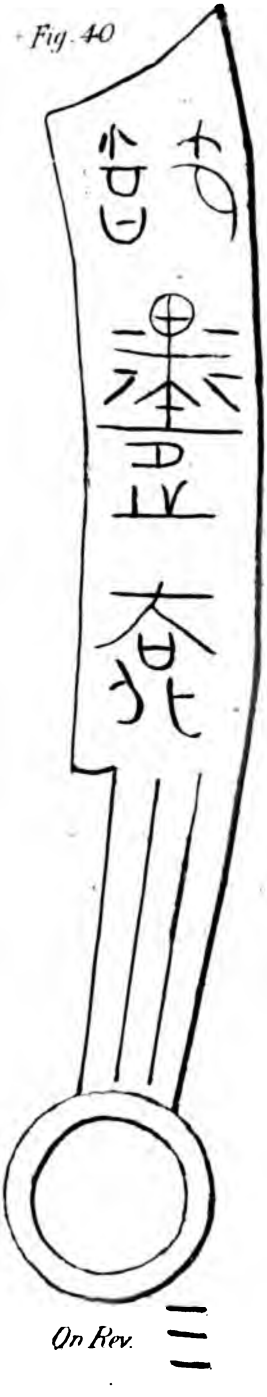

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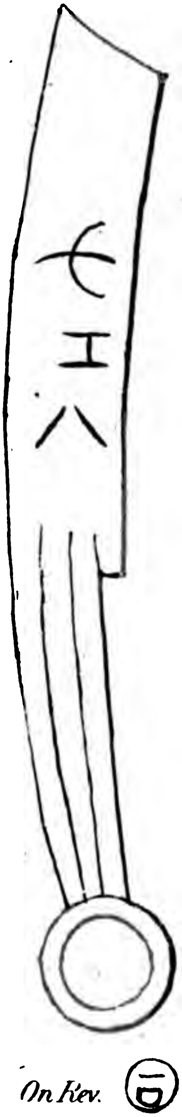
Fig. 42



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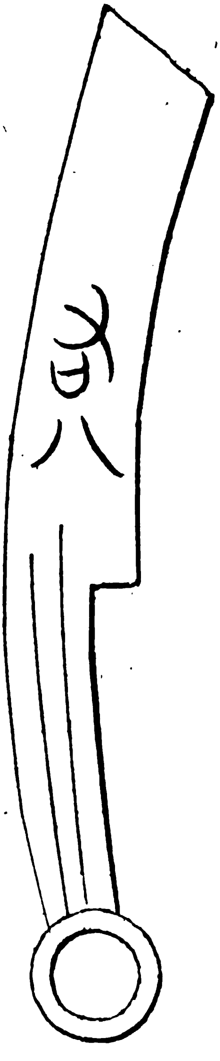
CHINESE COINS PLATE 10

Fig. 42



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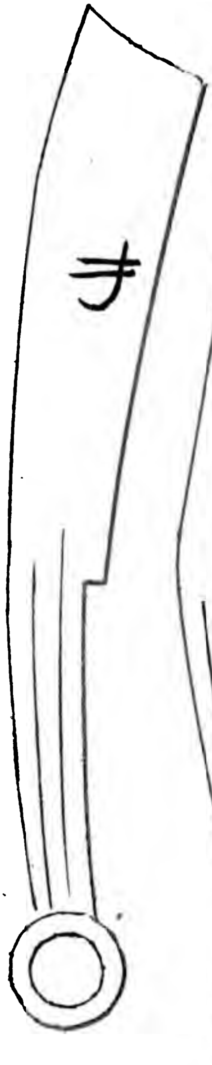

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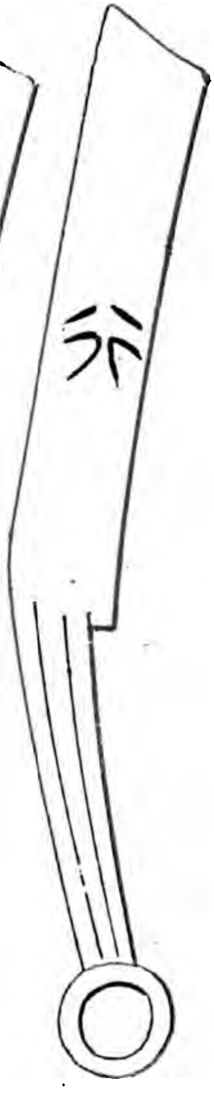
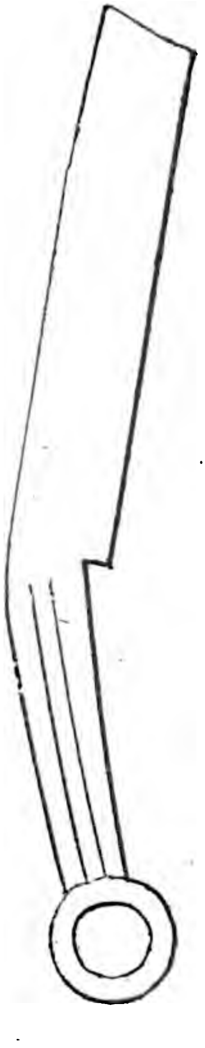
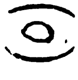


Fig. 45





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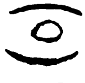

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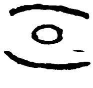

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CHINESE COINS PLATE 11

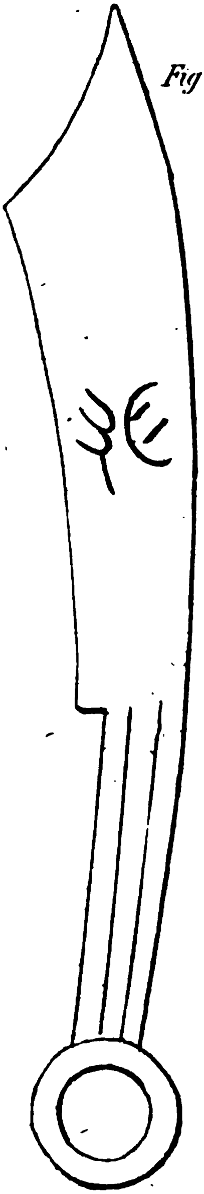
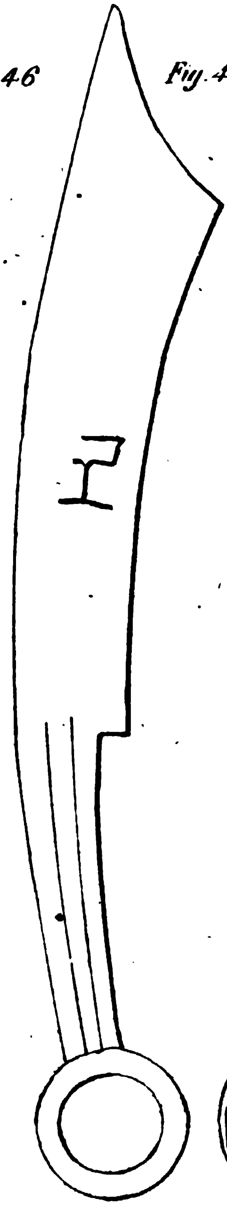


Fig. 46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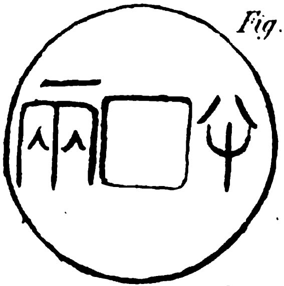
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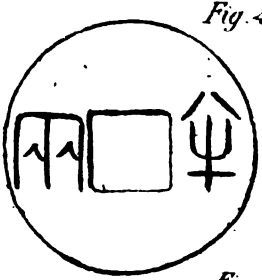
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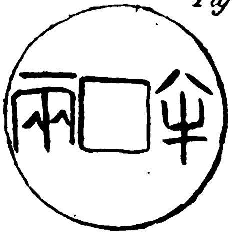
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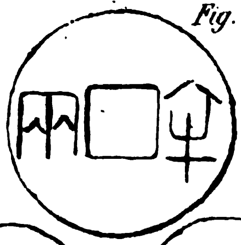
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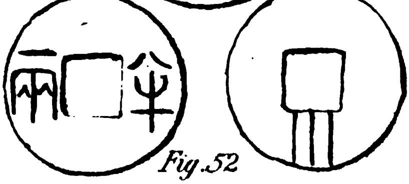
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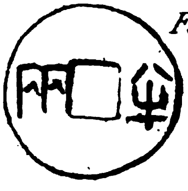
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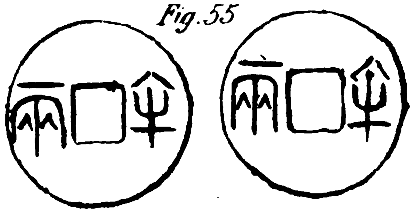
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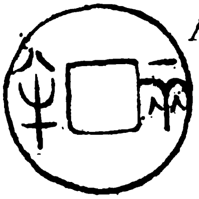
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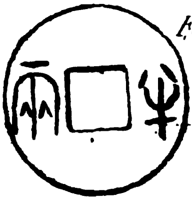
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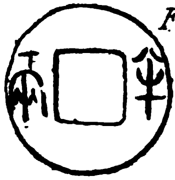
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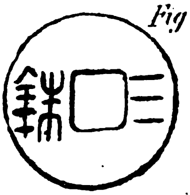
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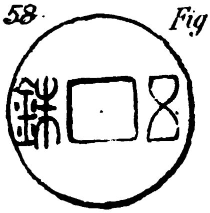
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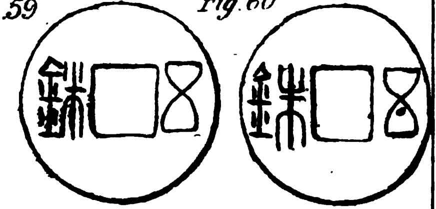
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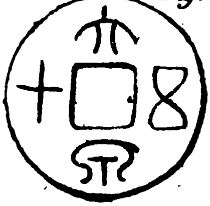
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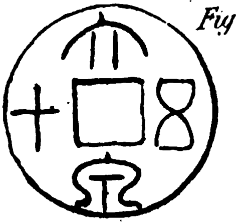
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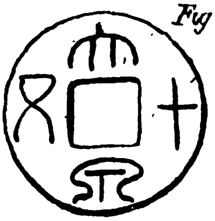
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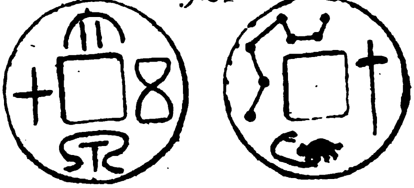
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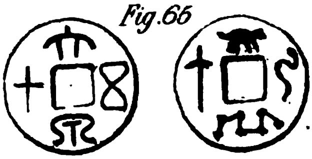
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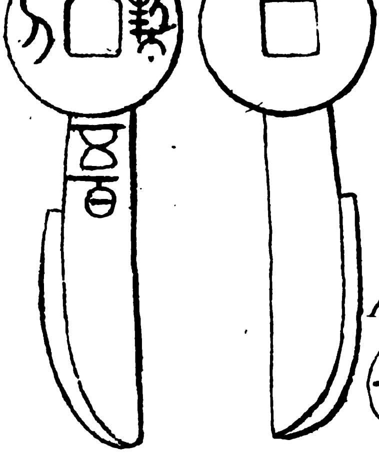
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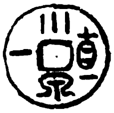
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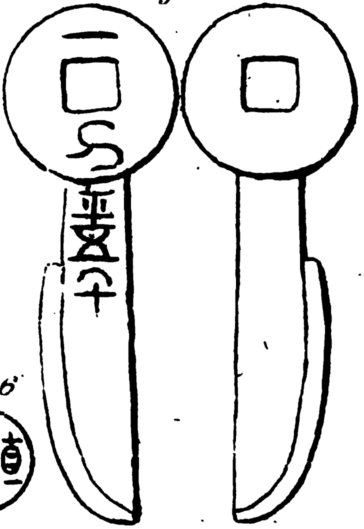
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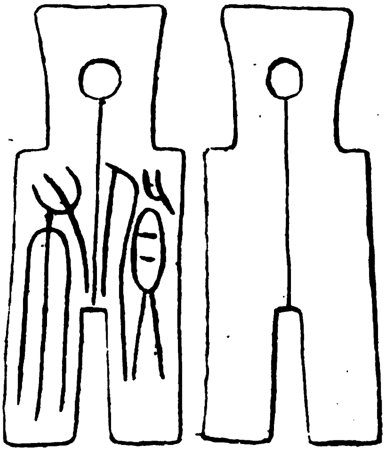
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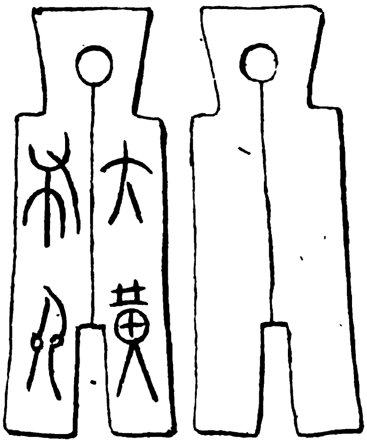
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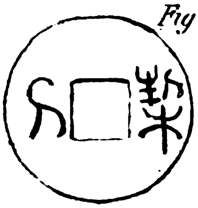
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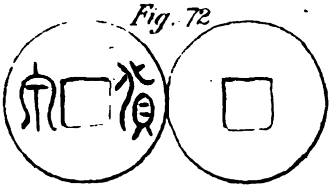
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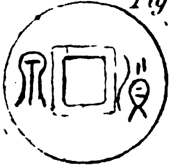
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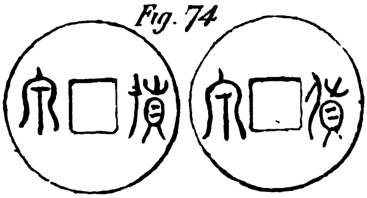
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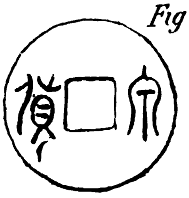
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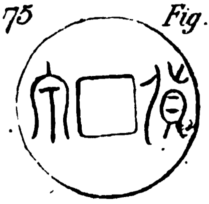
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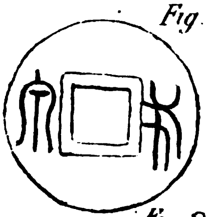
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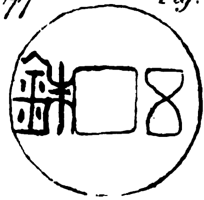
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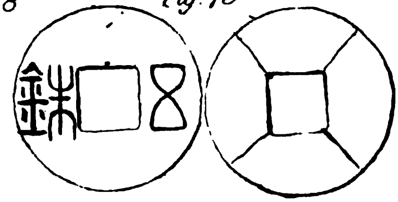
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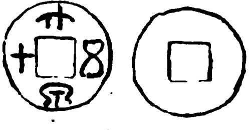
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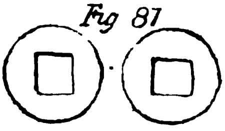
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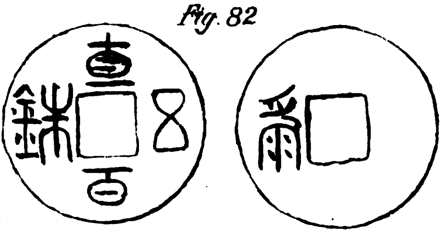
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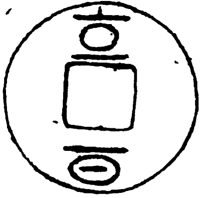
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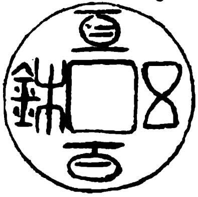
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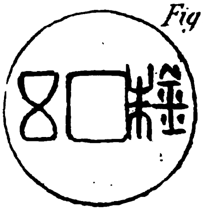
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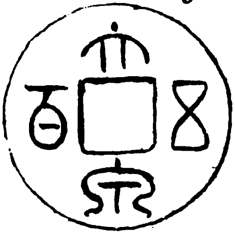
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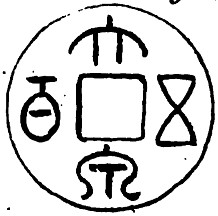
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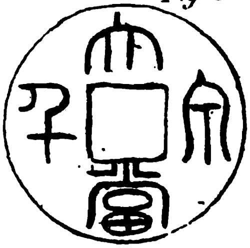
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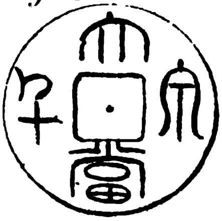
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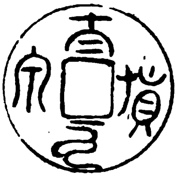
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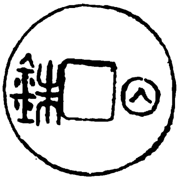
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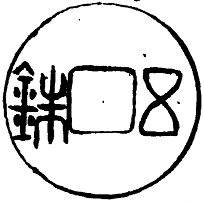
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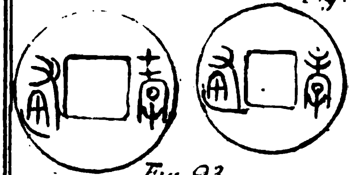
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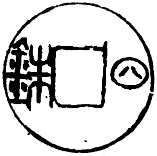
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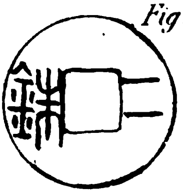
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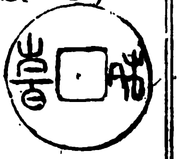
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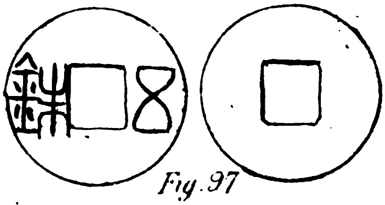
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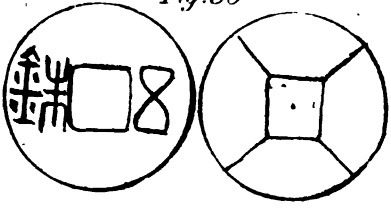
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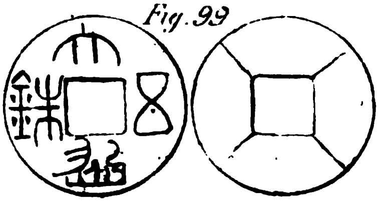
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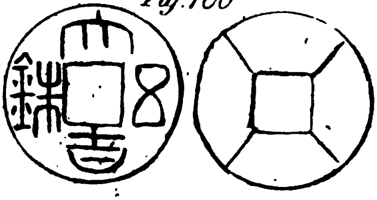
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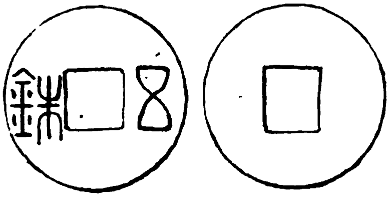

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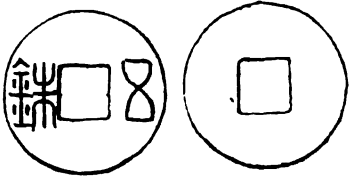

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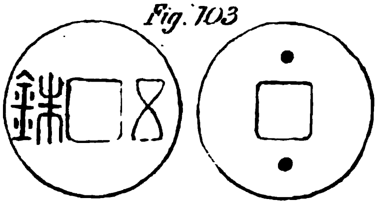

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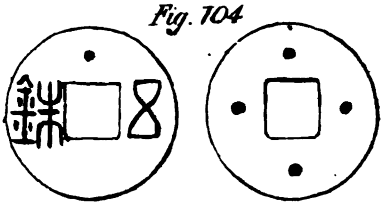

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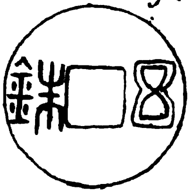

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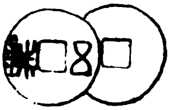

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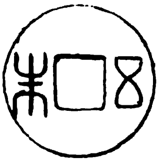

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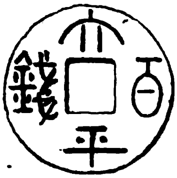

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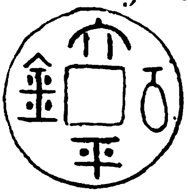

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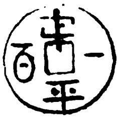

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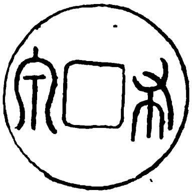

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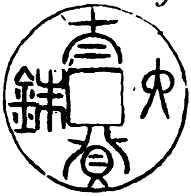

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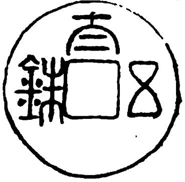

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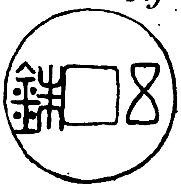

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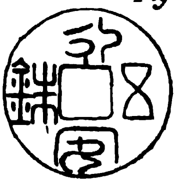

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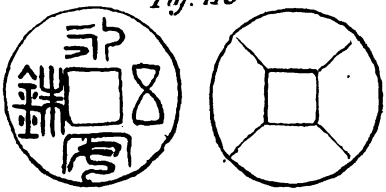

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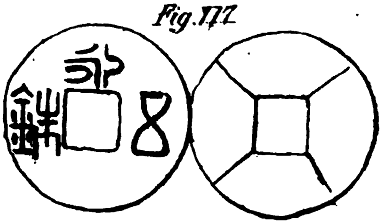

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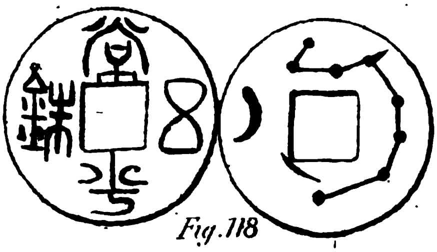
CHINESE COINS PLATE 16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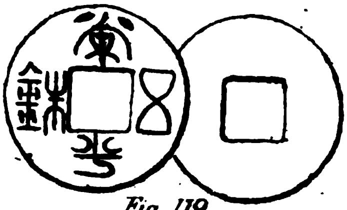


Fig. 119

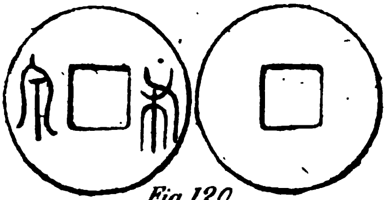


Fig. 120

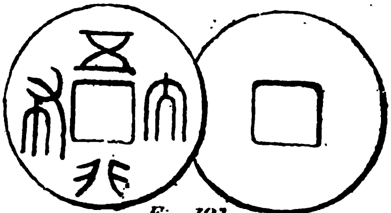


Fig. 121

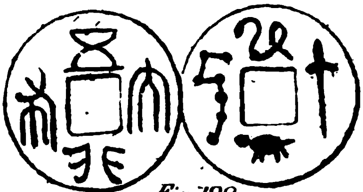


Fig. 122

Fig. 123

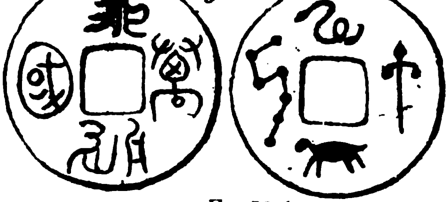


Fig. 124

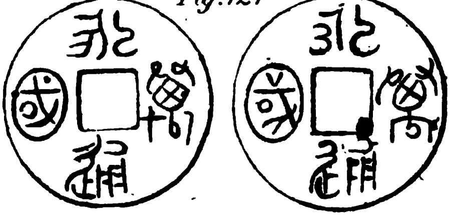


Fig. 125

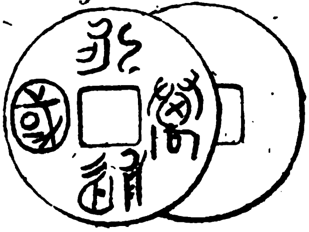


Fig. 126

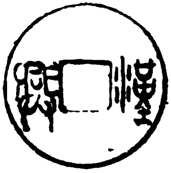


Fig. 127

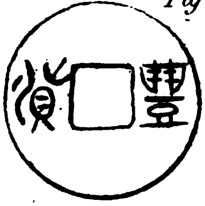
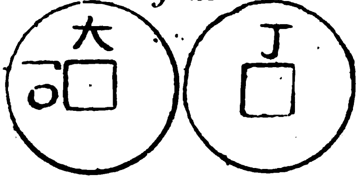


Fig. 128



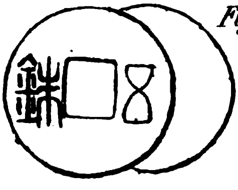


Fig. 129

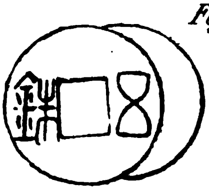


Fig. 130

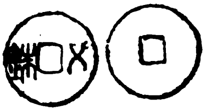


Fig. 131

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THE COINS OF CHINA.

By C. T. GARDNER, Esq., H.B.M.'s Consul at Tientsin.

[Read to the Members by Mr. Egbert Steinthal, January 25th, 1889.]

(See Illustrations drawn by Mr. Gardner.)

PREFATORY.

AN ordinarily-educated Englishman, who has acquainted himself with the literature within his reach with regard to China, will probably have remarked that the old and new school of sinologues regard that country from an entirely different standpoint.

The old school looked on China as one of the most ancient nations of the world, and believed that she had formed herself into an empire four thousand years ago, with an homogeneous population, and with a peculiar civilisation, in which there has been no change for forty centuries, except perhaps a slight retrogression, and that, during these forty centuries, China has been isolated from and uninfluenced by the rest of the globe.

The new school denies the extreme antiquity of China. Thus, Mr. Mayers considered that the history of China only begins in the seventh century before Christ. Mr. Oxenham considers the history of China does not begin till considerably later than that. Some even go so far as to state that though we possess isolated historical facts as early as B.C. 255, reliable continuous Chinese history does not commence till the seventh century of our era.

Modern scholars are almost unanimous in rejecting, as pure myths, native stories of the Five Rulers of Yao, Shun, and Yŭ, the Hsia, and the Shang dynasties, and the early records of the Chows—*i.e.*, of all stories professing to treat of times previous to B.C. 700—after which date they assign more or less long periods as the age of legends. Most modern students hold the view that China's civilisation has been progressive, and that it did not assume its modern form till the middle of the Tang dynasty—that is, about the eighth or ninth century A.D.—about the same time that modern Europe began to assume its present state.

Modern scholars generally hold that the population of China is by no means homogeneous, but that the country has been populated possibly in the same manner, at the same dates, and from the same regions, as Europe by successive hordes or swarms of tribes one after the other, who have, in some instances, driven their predecessors and the aborigines into the mountains (where they still exist, and maintain a *quasi* independence, under various names[*]), and in other instances merged with them by marriage and in other modes[†].

Institutions which seemed to the former generation of scholars to be peculiar to China, such as ancestral worship, birth, marriage, and death customs, communal tenure of land, &c., are now considered to be developments or survivals of practices which at various stages in the evolution of civilisation have been common to the human race.

A more extended survey of Chinese history, literature, and monuments has caused modern scholars to believe that the old belief in the stagnation and immobility of the Chinese was not well founded, and that the progress of China, though slow, has been more rapid than used to be supposed; that whenever we confine our attention to one special branch of Chinese civilisation, we find there has been in that branch a gradual and constant development—and this holds good, whether we take the realm of law, government, religion and philosophy, or the domain of the arts, useful or ornamental, of agriculture, and of mechanical contrivance; and that, further, the fact that many of these branches show signs of foreign influences must modify the old notion of China's isolation.[‡]

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[*] The following are a few of the aborigines still existing and maintaining a *quasi* independence in China or China's confines: The Lo Lo and Si Fan, in Szechuan; the Khakyens, between Burmah and China; the Laqs, in North-west Tonquin; the Yaos, Kwangtung; the Li, Hainan; the Fan, Formosa; Miastze, Yunnan, Kweichow, &c. The following are probably aboriginal tribes, that have to some extent adopted Chinese dress and customs, but which have not retained their independence: The Pên tis and Tan kas, in Kwangtung; the Hakkas, Kwangtung and Fokien; the Domin, Fokien and Chekiang, &c.

[†] By the memorials to the Throne written by Han Wên Kung (about A.D. 820) we find the inhabitants of Kwangtung were then regarded by Chinese officers as foreigners. In 1874 the seventy or so district magistrates of Kwangtung were called upon for reports with regard to the aborigines in their several districts. By these reports it appeared that very many of the inhabitants of Kwangtung are of non-Chinese origin, whose progenitors only adopted Chinese dress and customs within the last two centuries. The same merging of the aborigines with the Chinese has probably been silently taking place throughout China for the last eighteen centuries.

[‡] In law: The code of each successive dynasty shows a slight advance on the code of the dynasty preceding, and the codes have themselves been modified and supplemented periodically by new laws. In government: The form of government so accurately described in detail by the Jesuit writers of two centuries ago has undergone many and important changes. In religion: Buddhism is undoubtedly, and Taoism is probably, of Indian origin. There were a few Chinese Buddhists in the third century B.C. But, as has been shown by the Revs. Drs. Chalmers and Eitel, Buddhism only began to be a popular religion in China after the ninth century of our era. In philosophy: The system of philosophy sanctioned by the Chinese government, and professedly adopted by all educated Chinese, is undoubtedly, as stated by the Rev. Dr. Legge, largely due to Chu Hi and the commentators of the twelfth century of our era. The arts: The golden age of bronze work in China is from 1200 to 1400 A.D. In crockery ware, from 1400 to 1600 A.D., the art of cloisonnée was introduced by Jesuit missionaries. The arts of paper manufacture, cotton and linen textiles, printing, &c., are comparatively modern. In agriculture: The cultivation in China of grapes, tobacco, cotton, potatoes, the sessamum, is but recent. For all these useful plants China is indebted to foreign countries. Mechanical contrivances: A good idea of how gradual the advance of China has been in mechanical knowledge is found in the history of the building of the sea wall of Chêkiang (Chê chiang shêng chi).

At the present moment we are in possession of large tracts of knowledge that have been acquired for us by students who have rested from their labours. We have still happily among us many earnest workers, in the vast field of Chinese lore,* who are now busily engaged in facilitating the study of the Chinese language, and in collecting material which will, I trust, soon enable us to form a correct opinion as to the origin of the Chinese, as to the weight to be attached to their claims to antiquity, as to the position to be assigned to, and the true lessons to be learnt from, their myths, legends, laws and customs, and as to whether the growing impression that China, instead of being an exception, is an exemplification of the laws of evolution that have governed the development of other nations is or is not justified.

There is one branch of Chinese knowledge to which I have, the last twenty years or so, devoted some attention, and that is Chinese coins. The question arises, Do these coins throw any light on the supposed antiquity, homogeny, stagnation and isolation of the Chinese? To enable the reader to form some opinion on this point, I have endeavoured, in the following paper, to show the evolution of money in China, by drawings and explanations of one hundred and thirty-one varieties of coins, considered by the Chinese as the most ancient coins issued. With regard to the antiquity of China, the evidence is negative. I can only say that the most ancient Chinese coins I have heard of cannot be attributed to an earlier period than 400 B.C. The general use of coins as money is very much later than that date. The evolution of the idea of using coins as circulating media of exchange was so exceedingly gradual that it is impossible to state definitely the exact time when money began to be used in China. The first evidence we have of *bullion* being a principal means of exchange is in B.C. 255, when pieces of bronze, with the weight inscribed upon them, were issued. The first evidence we have of coins being intended for universal currency are doubtful ones, in A.D. 168 and in A.D. 502. With regard to the homogeny of China, the indications given by coins seem to show that the old ideas on that subject must be modified. The coins would seem to point to China being occupied by a variety of tribes (not all of the SAME race), who, though they may have acknowledged the supremacy of one or another among them at various times, were not welded into a nation till the time of the Tangs, A.D. 618-905. After this, China was again split up into five states, till the Sungs reunited the empire in A.D. 960 to

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* Of the scholars we have lost, I would mention with reverence the names of Mayers, Wylie. and Williams. The following are the names of a few of the present workers: The Rev. Drs. Legge, Chalmers, Eitel, and Edkins, in philosophy, religion, literature, and philology; Messrs, Alabaster, Jamieson, and Parker, in law; Messrs. Giles, Hirth, Phillips, and Playfair, in geography, literature, intercourse with foreign nations, and ethnology; Monsieur Terrien de la Couperie, in ancient writing; Sir Thomas Wade and Mr. Hillier, in the modern language; Mr. Walters, in Confucianism; Mr. Oxenham, in history.

A.D. 1126. Then China was again divided between north and south, till the conquests of Ghengis and Kublai Khan, in the 13th century, since which date China has practically been a single empire, which, with occasional losses, has gradually extended, or at all events consolidated, its powers to the present days.

With regard to the alleged stagnation of China, the evidence of the coins tells a very different tale. In no case does the modern Chinese writing occur on a coin that can be attributed to a date previous to the eighth century of our era. The earliest appearance of the cursive mode of writing is on a Sung coin of the date A.D. 990—995.

As to whether the coins of China show traces of a foreign element, I would draw a distinction between coins considered as money and coins used as talismans and charms.

With regard to the former I am not sufficiently acquainted with the mode of evolution of money in other countries to state positively that China has developed money in an unique and peculiar manner: positive evidence of the influence of foreign nations is in this respect absent to a very remarkable degree. This is all the more noteworthy, as we know that China, at a very early date, was acquainted with the coins of certain other nations. Sze Ma Chien, in his travels, about B.C. 100, collected several gold and silver coins bearing the effigies of sovereigns and states ruled over by the descendants and successors of descendants of Alexander's generals. These silver coins were at the time imitated in bronze by Chinese moulders, and the imitations are now occasionally produced and worn as charms. Some of these imitations I have seen.*

On the reverses of both there is a man on horseback. Yet China has never used gold as a medium of exchange at all, and silver has always been used in bulk and not in coins. Nor has China ever placed the effigy of her sovereigns on her coins.

With regard to charms, on the other hand, the evidences of foreign influence are overwhelmingly numerous. In the present article I am confining myself as much as possible to Chinese coins, considered in relation in their relation to the evolution of money in China. I will therefore limit myself here to stating that, of the six hundred or so varieties of charms I have examined, about half contain evidences of foreign influences.

On the whole, I think the study of Chinese coins will lead us to draw the following inferences:—

In ancient and prehistoric times the country we now call China was inhabited more or less sparsely by various tribes who were acquainted with several metals, which they combined in various proportions, forming different kinds of bronzes; that having discovered how to mould their bronzes, they melted them into shapes, bearing a religious signification; that the pieces of bronze so shaped were, in the first instance, used as charms to avert malign or attract benign influences.

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* Drawings of two of these are shown on Plate 1.

The second stage was reached when such pieces of bronze were selected for recording grants, treaties, agreements, or promises. As China became populous, as intercourse among the various tribes and communities became more frequent, as the mutual obligations of tribe to tribe and town to town became more complicated, the records of these grants, treaties, agreements, and promises became more numerous. The usage seems to have originated of indicating on these records the party under an obligation and the nature of that obligation. Where the grantor of the piece of metal was powerful, it would sometimes, as in the case of land, be equivalent to a title-deed—in other cases to a title to specified commodities, to a certificate of honour or pardon.

Where such pieces of bronze passed between tribe and tribe they seemed to have expressed the obligation of the tribe granting the bronze to give something to or to do something for the tribe to whom the bronze was handed.

As the tribes increased and split up into village communities, the communities, in their intercourse with each other, seemed to have adopted the same form for recording their obligations as were used by tribe with tribe, namely, a piece of bronze, to the shape of which the idea of supernatural inherent power attached is selected. Forms of inscriptions originally denoting great solemnity still continue to be used, and on the record is further inscribed the nature of the obligation. These obligations, as civilisation increased, became as various as the needs of the communities—military and domestic service, cutting forests, building weirs, draining marshes, agricultural produce, farm labour, cattle, clothing, metal, &c. The coins recording such obligations will necessarily be, in some particulars, uniform, in others various. Thus the thousand or so varieties of the coins of the Ch'is that have come down to us (see Figs. 33 to 40) are all of the same size and shape. Over ninety per cent of them have the same inscription on the face. The varieties are generally found on the obverse.

In course of time a third stage in the evolution of money in China gradually develops. Metal becomes more and more the desideratum of all classes. The warrior requires it for his arms, the husbandman for his agricultural implements, the householder for his domestic utensils, the workman for his tools, &c. Metal thus gradually becomes a more or less recognised medium of exchange.

At one period, in certain localities in China, bronze arrow heads became a much used medium of exchange. A drawing of one such arrow head will be found on Plate 1. The most cursory examination of this coin shows the following facts: (1) It is really ancient. (2) That, though it has a place for a shaft, it could never have been used in war, it being far too thin and flexible and light. The shape was therefore merely conventional. Most of these arrow heads have on them one character, similar to the characters on the knife coins of unidentified tribes. (See drawings Nos. 46 and 47.)

That these arrow heads were largely used as media of exchange is evidenced by their number, and from the fact that the word *ch'ien*, or money, is derived from *ch'ien*, an arrow.

A fourth stage in the evolution of money in China was reached when metal, having become a medium of exchange, pieces of bronze, with their weight stamped upon them, were issued. At first such inscription was simply a certificate of weight. It gradually ceased to represent the actual weight, and became a certificate of value. The date of the issue of the first of such coins is probably about B.C. 255. It was issued in what was then the most flourishing part of China, and continued to be issued concurrently both with more archaic and modern forms of coins till, probably, the tenth century A.D., and while we find reversions to the old shapes, which originated in religious ideas, the convenient round form of coin, with a hole in the centre for stringing, more and more prevails from this time forth.

In the course of the eight centuries between B.C. 200 and A.D. 600 silver became *par excellence* the standard of value, and the copper and bronze coins issued bear some relation in value, more or less, fixed to the ounce of silver. The ounce of silver is divided into 10ths, 100ths, 1000ths, instead of into halfs, quarters, 16ths, 256ths, &c., or such awkward amounts as 5/32nds, 3/32nds, &c. The idea that the issue of coins is a sovereign's prerogative germinates, and as early as A.D. 454 a coin is issued on which is inscribed the name of the reign of the sovereign issuing it. In the Tang dynasty, A.D. 618 A.D. 950, this placing on the coin the name of the sovereign's reign becomes a constant practice, and in the time of the Sungs, from A.D. 960, a universal one.

The use of coins in money was then, A.D. 960, established in China on pretty much the same system as it exists in the present day.

It does not enter into the scope of my present article to treat of medals, charms, bank-notes, &c. I am therefore reluctantly compelled to delay consideration of these subjects to some future occasion, merely mentioning that the earliest bank-note I have seen belonged to the 15th century. I believe such notes existed some two centuries previously. Government bills have during the last century or so been frequently issued, and were till recently constantly repudiated. Foreign loans belong exclusively to the last twenty-five years. It is hoped, both for the sake of China and of future bondholders, that the repugnance against these loans existing in the Chinese mind will not weaken, and that such loans will not be contracted to an undue extent.

EVOLUTION OF MONEY IN CHINA.—THE FIRST OLD CHINESE COINS.

The Chinese are rich in works on numismatics, more or less exhaustive, which generally quote the same authorities for their statements, and which class the coins in pretty much the same order.

It is proposed in the present article to give in their order the first drawings in one native work, the "Ch'ien chi hsin pien," to attach to the drawings the grist of the statements of native scholars on the coins represented, and to add a few explanatory and critical observations.

The word *ch'ien*, which is translated coins, includes besides money, medals and charms—pieces of metal of various uses and significations, which will be alluded to in the observations.

It is not probable that the oldest of these coins are really as ancient as believed by certain native scholars; that some are of great antiquity is indicated by the appearance on them of what the Chinese call "red, blue, and green rust." The *red rust* is the appearance of age shown by bronze in which gold is present. The blue and green are different manifestations of sulphate of copper. Further, different kinds of bronze conduct heat in varying degrees—they feel differently, and can be distinguished by sense of touch. Though the demand by Chinese for certain ancient coins, believed to exercise benign influences, is so great that counterfeiting such coins is, and has long been, an industry, even the most skilful counterfeits, made of old bronze melted down for the purpose, can be detected, as the Chinese chemists have not yet succeeded in giving such counterfeits the same red, blue, and green rusts which are naturally produced by age.

Religious motives have probably often determined the curious shapes of many Chinese coins. It is possible that some of the earlier Chinese coins may have been the records of contracts. In such cases the shapes may have been selected to give a greater solemnity to the contract by attaching to its record a religious sanction. In other cases such shapes may have been selected to propitiate benign and avert malign influences.

Other shapes, such as the round shape, may have been adopted from simple motives of convenience.

The drawings are in all cases the same size as the coin represented.

Fig. 1.—Coin ascribed to mythical Emperor Yao, who is stated to have reigned for ninety-eight years, namely, from

B.C 2356 to B.C. 2258. The deciphering of the inscription on the face of this coin is not given by Chinese numismatists.

OBSERVATIONS.

The inscription may read "Tun-i" districts on the marches, which may have been analogous to the Tun t'ien march lands or "feods" subsequently established in the west of China by the Hans in B.C. 61*

The coin closely resembles Nos. 6, 7, 8, 9, 10, which there is reason to believe belong to the beginning of the Han dynasty—*i.e*, B.C. 200. These coins are rare. They are occasionally found in West Chekiang and Honan. Their use is doubtful. They may be charms, or records of contract, title deeds to land, certificate of service, or simply ornaments.

Fig. 2.—Coin attributed to mythical Emperor Shun, B.C. 2255 to B.C. 2205. The two central characters are said by some numismatists to mean "current as money." Others transcribe them by characters meaning "agreement made."

Fig. 3.—Coin ascribed by some Chinese numismatists to mythical Emperor Shun, B.C. 2255 to B.C. 2205, and by others said to have been moulded by Shun's great-grandson. Others, again, from the appearance of the metal, vaguely attribute this coin to sometime previous to B.C. 250. The characters X I = are doubtless five, one, two.

Fig. 4.—Coin attributed to Emperor Shun, B.C. 2255 to B.C. 2205. Eyelet hole, said by Chinese numismatists to have been drilled at a much more recent date.

OBSERVATIONS.

Coins, 2, 3, and 4 are found in West Kiangsi and Hupei. In all three coins occur the character , which, as stated before, may mean Tun, marches. In 2 and 4 the next three characters are identical, while the two last characters differ. The first two characters in both these coins may be Tun cheng (marches settled), and may be the name of a locality. The second two characters may mean agreement concluded, and the last two characters may be subject-matter of contract. The coins may probably be the records of a contract, as follows: At Tun chen'g it is agreed that such and such commodities (or services) have been (or are to be) rendered.

In No. 3 the second character may be Ko, a spear or spearsman. The second line may mean "goods complete, five, one, two," the third line is the same as in No. 2. The coin may possibly be a requisition for stores for a regiment of soldiers fighting on the frontier, or a certificate that military services

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* NOTE.— occurs in coins 21 and 22· where Chinese numismatists decipher "I," town lands. It is difficult to see why it should not be so deciphered on coin

have been performed entitling holder to certain rewards, or the march spears may be name of place, in which case the community of such place acknowledges a debt in commodities for military services. From the fact of the same character appearing as in No. 1, it is probable that the date and place of issue of these coins were not very remote from those of coin 1. The date may be B.C. 400 to B.C. 255, or last days of the Chows.

Fig. 5.—Coin said to have been minted by Kao Yang Shih, about B.C. 2205. Characters on face, Shan Yang, a city, or rather district, known in the time of the Hans, B.C. 206 to A.D. 220. Some Chinese numismatists argue that these and the succeeding coins must have been issued in the Han times.

Figs. 6 and 7.—Coins said to have been minted by Kao Yang Shih. Characters on face: An Yang, a city, or rather district, known in the time of the Hans, B.C. 206 to A.D. 220. Character on obverse, probably two.

Figs. 8, 9, and 10.—Coins attributed to Kao Yang Shih. Characters on face: P'ing yang, a district of the Hans, B.C. 206 to A.D. 220.

Fig. 11.—Some Chinese scholars attribute this coin to Kao Yang Shih. Others, again, consider it belongs to the Han period. They read the inscription to mean An yang (city), two pieces of gold.

Figs. 12 and 13.—In the above coins the characters on the face to the left are acknowledged by all scholars to be Yang. The date of both coins seem doubtful. The characters to the right are by some read Yin and Hsu or Tao. If this is correct the inscriptions will read Yin Yang, Hsu Yang, and Tao Yang, names of districts of the Han dynasty. The character on the obverse of No. 13 resembles the modern Chinese character for right hand, but scholars are doubtful as to whether that is its real meaning. There is, too, the addition of a perpendicular stroke, the meaning of which is doubtful. Generally, Chinese scholars consider this and the succeeding coins to belong to somewhat the same period as the preceding ones.

Fig. 14.—The above ten coins are divided by Chinese numismatists into four classes. They are drawn from the coins in collection of Ching, a noted Chinese antiquarian. In this collection there are twenty-five other classes of what are called, from their shape, "bale" coins. They are classed from the characters on them, mostly the names of places in the environments of the Han seat of government.

Figs. 15, 16, and 17 illustrate three of the 29 kinds of coins in the Ching collection. The inscriptions, as explained by most Chinese numismatists, are:—

Fig. 15.—"Tun liu." District in Han times on the marches.

Fig. 16.—" Chang tze," townlands. District in Han times on the marches.

Fig. 17.—" Chuan," mound or buttress. District in Han times on the marches.

Fig. 18.—The character on face to the right is said to be " water; " on the left, to be undecipherable.

Fig. 19.—The characters on face are said to be " Ko-i," spear town lands. The character on the reverse is declared by Chinese numismatists to be inexplicable.

Fig. 20.—The characters on the face are said by Chinese numismatists to be undecipherable, but to bear a resemblance to Figs. 3, 9.

OBSERVATIONS ON COINS FIG. 5 TO FIG. 20.

The above 16 coins are made of the same kind of metal, and are doubtless very ancient. They resemble each other, too, in the delicate tracery of the inscriptions; they are also, with the exception of Fig. 20, of the same shape and weight. They therefore probably belong to proximate regions and dates, as some of these coins (and of other like coins not represented in the " Ch'ien chi hsin pien ") contain on their faces the names of localities in the realm of the Hans. The inference arises that the native numismatists who ascribe them to about the Han times are correct. If so, their date will be somewhere between 300 and 150 B.C.

Fig. 5 has on its face the name of a Han locality and a plain reverse. It is difficult to decide whether it is a medal, charm, ornament, record of contract, or what.

Figs. 6, 7, 8, 9, 10, 12, 15, 16, and 17 have on their faces the name of a Han locality, and on their obverses the numerical figure for two. These and similar coins may have been issued by the communities of the several localities as acknowledgments of indebtedness in a certain quantity of unexpressed but understood commodities.

In Fig. 11 the inscription deciphered as An is not written in the same way as the AN in An Yang. It is written in the same way as AN—the An tribes of Shên hsi. In no other coin is deciphered as standing for Yang. Like Fig. 5, Fig. 11 has a blank obverse. Unlike Fig. 5 it has the numeral two on the face. For the reasons before stated, Fig. 11 probably belongs to the same date nearly as the other coins of the group. Possibly this coin may be an acknowledgment of tribute due from the An tribes to the victorious Ch'in or Han, B.C. 255 or B.C. 206.

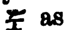
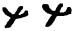
In Fig. 13 the character on the left, read Yang, is unlike the Yang of the other coins. The character on the right, taken ideographically, is a canopy, a tree, and something unintelligible. It is possible the two characters on the face represent a locality where there were forests. The characters on the reverse doubtless imply a certain quantity of labour, whether we follow Chinese authorities, and take  as a combined character, meaning right hand, or decipher its component parts ideographically, hand, 工 work.* The coin may possibly be a record of engagement to provide a certain amount of labour to clear forest land.

Fig. 14 introduces us to a type of inscription not found in previous coins, and not deciphered by Chinese numismatists. If deciphered ideographically the inscription on the face would represent two houses and a woman, three men in normal position, and two men reversed. If deciphered on the combined system, the meaning might be domestic slaves. It is possible this coin is the record of a transaction having slaves as the subject-matter.

In Figs. 15, 16, and 17, the mode of writing is different from that in previous coins. Perhaps in these the mode of writing of bordering tribes instead of the Han mode was adopted. There are reasons for accepting the deciphering given by Chinese numismatists as correct, and as in the cases Figs. 6, 7, 8, &c., these coins may be records of the communities of the localities named being liable to be called upon to give certain commodities.

Figs. 18 and 19 seem to present yet another variety of type. Fig. 18 may be the record of an obligation as to water, marshes, fishing, or weir making. In Fig. 19, may perhaps be "people,' "folk," rather than town lands. Ko (spear) may be used in same sense as Tun, a word with a similar signification. The inscription on the obverse may be subdivided, — one,) a fixed quantity, tien, land. is the character in Tun t'ien, the *feods* on the marches previously mentioned as granted by the Hans in B.C. 61. The meaning of the inscription on the coin may be—face, warrior; obverse, "one lot land." The coin is possibly a species of title deed for a plot of land held on military tenure.

Fig. 20 is slightly different in shape from the coins previously described. The style of writing also differs. Deciphered ideographically, some sort of vegetable produce and a reaping-hook may be indicated ( being ideograph for herb). The coin may represent an obligation to give over a portion of a harvest.

Figs. 21 and 22.—Some Chinese numismatists state that the great Emperor Yū, who drained off the waters from China,

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* Chinese characters are divided into six classes : (1) Ideographic, as ⊙ sun, ☽ moon ; (2) indicative, as 上 above, 下 below ; (3) combined, as 明 light, right hand, left hand ; (4) phonetic, as 江 kiang, a river, from water and sound, kung ; &c.

divided China into nine provinces, and issued coins for each, and attribute these coins to that period, B.C. 2205 to B.C. 2197. Others ascribe them to the Hsia dynasty, which Yū is reputed to have founded, B.C. 2205 to B.C. 1766. Others say these coins are not money, but charms. Others that, though ancient, the real date cannot be ascertained. The inscription on the face is said by Chinese scholars to be "An town, valuable for two pieces gold." The An town they state was near the modern Hsia hsien, in Shên hsi, attributed by some to the Hsia dynasty.

Inscription on Fig. 23 reads, "An district, two pieces gold." [Pieces gold I doubt.]

On Fig. 24, "An district, one piece gold value." Some Chinese numismatists think a name of a barbarian town should be read instead of An district. Note Fig. 24 has eyelet hole at bottom for stringing.

OBSERVATIONS.

Figs. 21, 22, 23, and 24 are found in Shen hsi. They were probably issued by the An people previous to B.C. 250. The inscriptions on the face of Nos. 21 and 22 may indicate—

$$\text{An}\begin{cases}\text{town}\\ \text{tribes}\end{cases}\qquad\text{Two}\begin{cases}\text{pieces gold}\\ \text{goods complete}\end{cases}$$

The inscription on the obverse of Fig. 21 may represent an ox's head under a canopy. The coins may possibly be an acknowledgment of debt in cattle.

Fig. 23 is probably a contract by the An people having ⊥, whatever that may be, as its subject-matter.

In Fig. 24, if the character to the right is rightly deciphered by those native numismatists who consider it the name of a non-Chinese town or clan, the coin is possibly an acknowledgment of debt to the Ans by some non-Chinese tribe in their vicinity.

COINS ATTRIBUTED TO SHANG DYNASTY, B.C. 1766 TO B.C. 1122.

Fig. 25.—Chinese numismatists generally agree that the characters on the face of this coin are "T'ang gold," and on the obverse, two; and as T'ang (which by the way also means marsh pond) was the reputed name of the founder of the legendary Shang dynasty, they ascribe the coin to that dynasty, and state it to be a coin for two pieces of gold. The date and use of this coin are doubtful.

Fig. 26.—Some numismatists unhesitatingly ascribe this coin to the Shang dynasty, B.C. 1766 to B.C. 1122. Others state they think it belongs to one of the three dynasties, B.C. 2205 to B.C. 250. The most accepted deciphering of the inscriptions on face and reverse are, "Shang pu tang chin shih huo," *i.e.*, "Bales of merchandise, with gold current for ten lots."

OBSERVATIONS.

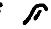
The deciphering of  by "gold" doubtful; "goods" a preferable rendering. Many of these coins are extant. In the metal they are made of they resemble coins of the third to the fifth century of our era.

Fig. 27.—Chinese scholars, but with some hesitation, read the inscription on the face of this coin "Kung," and on obverse "Tsze." They take the two characters together to mean "heir apparent." No reason is given why this coin is ascribed to the Shang dynasty.

Fig. 28.—Why ascribed to the Shang dynasty I do not know. Characters on face read by Chinese "Fu pei." N of the Fu on obverse. Some read the characters "Shang huo," merchandise, or covenanted goods; some "Shang chin," marketable metal.

OBSERVATIONS.

Coin Fig. 27 is probably only a charm. It is not possible to fix its date accurately. It is not likely that it is older than the Christian era.

Coin Fig. 28 has a large hole for stringing, for convenience in carrying, and hence it may he inferred that it was intended to be negotiable and carried in quantities. If the deciphering "Fu pei" be accepted, these coins represent probably indebtedness by the communities of a locality. If Fu pei be taken, the coins would possibly be a record of obligation to pay tribute. Judging by the metal of which the coin is made, and for other reasons, it is not probable that this coin is older than the Christian era. It is very probable also it may be one of the coins of the "Pu" (bale) shape, issued in the times of Wang mang, about A.D. 9, which have not yet been identified.

COINS ATTRIBUTED TO THE CHOW DYNASTY, B.C. 1122 TO 255.

Figs. 29 and 30.—Chinese numismatists state that two kinds of round flat copper were issued by the Chows—one with rims, the other without rims—as money, without any inscription; but as such coins have since been issued, in times of warfare, up to quite a recent date, they acknowledge that it is impossible to fix the dates of the extant specimens. None of the extant specimens I have seen could be attributed to an earlier date than the 5th century of our era. Some are undoubtedly as recent as the 15th or 17th centuries.

Fig. 31.—A brief notice in ancient works, that the Ching prince of the Chow dynasty, B.C. 618, issued 50 coins, causes some Chinese numismatists to say that this is the only one of the 50 now extant. Others attribute this coin to Ching's successors.

OBSERVATIONS.

This coin is doubtless money in the proper sense. The characters on it are in comparatively modern style. Pao huo, current goods or value. The use of Pao for "current coin" is also very modern. The specimens I have seen of the metal of which this coin is made resemble the metal of the end of the Tang and beginning of the Sung dynasty coins, A.D. 960. For other reasons, too, it probably belongs to about that date.

Fig. 32.—Chinese numismatists say there is not the slightest doubt this coin belongs to the Chow dynasty. The inscription on it is, "Weight one liang twelve chu" (or weight "twelve chu of one liang," liang being a Chinese ounce and chu the 16th of an ounce). An ancient Chinese author has said: "The Chows issued coins weighing twelve chu." This coin does weigh twelve chu.

OBSERVATIONS.

The metal of this coin resembles the metal of coins belonging undoubtedly to B.C. 250. It is the same kind of metal as in Figs. 48 and 49, which will afterwards be remarked upon. There are many reasons, intrinsic and extrinsic, for considering that the Chinese numismatists are right in ascribing this coin to the Chow dynasty. Its date is in all probability a little previous to B.C. 255. It marks an advanced stage of development in the evolution of money in China. Metal must have been at the time, in the place of its issue, a very general medium of exchange, and commerce must have reached to a great magnitude to have evoked the idea of subdividing metal into pieces of fixed weight, with the amount of the weight of each piece upon it.

COINS OF CHI STATE, ABOUT B.C. 245.

Figs. 33 and 34.—Inscriptions on face of these coins, translated by Chinese, "Chi state—heir-apparent's commodity." Reverses not translated.

Figs. 35 and 36.—Inscription on face of these coins, translated by Chinese, "Chi state—heir-apparent's commodity." Reverse 35, "three hundred;" reverse 36, "three great."

Figs. 37 and 38.—Inscription on face, translated by Chinese: "Chi state—heir-apparent's commodity." Reverse, "three upper or superior." Inscription on obverse is explained by Chinese as "three commodities."

Figs. 39 and 40.—See subsequeut observations.

Figs. 33 to 40.—Chinese state that the Chi ruled in Shantung for 744 years.

Some explain 厺 in the inscription to mean "heir-apparent." If they are correct, that would date the first issue of these coins to B.C. 245, the date of the assumption of that title. Scholars generally admit that these coins continued to be issued after that date. Some scholars deny that these coins were in any sense money, and declare them to be charms. Some scholars state with regard to Fig. 39 that one of the Chi sovereigns, being hard pressed by his enemies, enlisted criminals (rebels) into his army, to whom he granted a pardon, and that these coins were the means by which they were redeemed, *i.e.*, certificates of pardon.

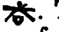
Fig. 40 is deciphered by Chinese scholars as "Chieh mo"—heir-apparent's commodity.

OBSERVATIONS.

The Chis undoubtedly flourished in Shantung for many years. They are mentioned as being one of the nine states flourishing in the times of Confucius—that is, the sixth century B.C. according to some scholars. There are sceptics who are not convinced that the dates ascribed to the Confucian literature can be received implicitly; but all admit that it embodies most valuable ancient traditions. The Chis appear again as one of the six amalgamated states in the third century B.C. Conquered by the Hans in the second century B.C., they appear among the nine states tributary to the Hans B.C. 206 to A.D. 220.

Of these coins, more than a thousand varieties—some varieties in considerable quantities—are still extant. They are still frequently found by the Shantung farmer, as he ploughs the land or excavates the ground to build a house. They weigh one and three-tenths of a Chinese ounce. They are made of beautiful bronze metal, in which there is an admixture of gold.

The vast majority of the specimens and varieties have the same inscription on the face—namely, that on Figs. 33, 34, 35, 36, 37; the obverses, except that they all contain the number three, differ widely.

Many reasons, too long to state in full, make it very improbable that "heir-apparent" is the correct deciphering of . The inscription though not the character Chi the name of the tribe, is almost certainly the symbol chosen by the Chi as their mark. It is extremely improbable that all these coins were merely charms—it is possible a few may have been so—it is nearly certain that none of them were money in the modern sense—and almost as certain that many of them not merely contain germs of money but are in themselves stages of development in the evolution of money in China.

It is probable that in Figs. 33, 34, 35, 36, and 37, and in the majority of the thousand or so coins called by collectors "the three character Chi knives," we have on the face the uniform solemn record of an obligation or debt, and on the obverse uniformly the number three, possibly not meaning a quantity, but expressing a religious idea and a specification of the nature of such debt or obligation. From an examination of the various inscriptions on the obverses of different coins, it would seem that these obligations vary in their subject-matter. "Service for periods of time," "Agricultural produce," "Cattle," "Slaves," "Land," "Metal," &c., &c., seem to be some of the subject-matters of these contracts.

It is very probable that Fig. 39 (which, by-the-by, is very rare), may have been used by malefactors who had served in the Chi ranks "for redeeming themselves," *i.e.*, as certificates of pardon; but it is more probable that they were also issued to all the soldiers as a solemn promise to reward them with "ten commodities," *i.e.*, with ten-tenths of the stipulated reward, or, as we should say, "their pay in full."

With regard to Fig. 40, in all probability the deciphering of the first two characters is correct. We have thus Chieh mo instead of Chi; but " and commodities" (these characters, as previously stated, were probably the formal record of an obligation) still remain. Now Chieh mo is the name of an ancient locality in Shantung. The coin may therefore be taken as a record of indebtedness on the part of the community of Chieh mo. There are several other similar coins extant which are called by collectors four, six, and eight character Chi knives, from the number of characters engraved on them, which contain on their faces inscriptions denoting other ancient localities in Shantung, with varying characters on the obverse. It seems probable that such coins are records of the communities of the several localities' indebtedness in respect to certain subject-matters specified on the obverse.

These coins are sometimes found singly and sometimes in varying quantities; sometimes in jars under old ruins and sometimes even strung on bronze wires. It is not rash, therefore, to infer that they were "negotiable instruments," and were hoarded. Had they only been charms they would have been all worn singly, as doubtless a few were, for there is good reason to suppose that after they had ceased to be negotiable they were valued for their supposed innate power of averting malign influences. The date of these coins is probably from 400 to, say, 50 B.C.

Coins attributed to Chü State, B.C. 246.

Fig. 41.—Characters on face not deciphered with certainty. said to be left hand. Character on obverse stated to be probably Chü.

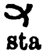
Fig. 42.—Character on face not deciphered.  said perhaps to be right hand. Character on obverse stated to be probably Chü.

Fig. 43.—Character on face not deciphered. Obverse read Chü.

Fig. 44.—Character on face deciphered "Hing"—to go, walk, current. Character on obverse Chü.

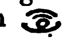
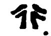
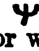
Fig. 45.—One most eminent and learned Chinese numismatist denies the antiquity of this coin. Others, with more or less hesitation, ascribe it to the Chü tribes.

Fig. 46.—Read "Hing"—to go or walk. Some numismatists consider this the name of some state or tribe. Some think it was issued by the Chi's.

Fig. 47.—Read "Ki." Some numismatists consider this a Chü coin, some a Chi coin, and some a coin of a separate tribe.

The Chüs were a tribe of non-Chinese origin existing in Shantung from the fifth to the second century B.C.

OBSERVATIONS.

I have seen drawings of several hundreds of varieties of these coins. Of the actual coins I have seen but few. These, judging from their metal and appearance, I should deem old. None that I have seen, however, bear the unmistakable *red*, green, or blue rust. The great majority of these coins have on one side the inscription , which is probably the sign for the Chü tribe. The inscriptions on the other side vary. If we adopt the system of deciphering that generally succeeds with ancient Chinese characters we should succeed only in a few instances in finding a meaning at all, and that meaning might be utterly wrong, as we may be dealing with non-Chinese characters, and do not know the rules of the game. For example, if we were certain we were dealing with Chinese characters we should have little hesitation in deciphering as left hand, as right hand,  two men seen in different positions, therefore moving, or in the abstract "walking," "motion," "current." Following out the same rule of the game we should decipher some of the other characters on these coins as "learned or civil distinguished from military," "an enclosure," &c., &c., but if we are dealing with non-Chinese symbols we are thrown on a sea of conjecture. How can we know that  may not be the symbol of a spear held fighting fashion, or war, or of a falling tree, or decay, or of a man bowing, or subjection? might equally be water flowing both ways, or a water-shed, as motion.

With regard to these coins, I am unable to do more than offer the following purely conjectural hypothesis: That as the *occurrence* of the symbol for Chü resembles the occurrence of the symbol for Chi in coins Figs. 33 to 40, and as the inscriptions on the other side vary in the same manner as on the Chi coins, a similar inference may be deduced—namely, that the coins Figs. 41 to 44, *et hoc genus omne*, express a record of the obligations of the Chu tribes specified by the symbols on the other side of the coins.

With regard to Fig. 45, Mr. Li, who considers the coin spurious, does not generally err on the side of incredulity.

Figs. 46 and 47 may have been issued by tribes which took and * for their symbols. Such marks may be only family or trade marks of makers. As to the use of these coins, many Chinese numismatists are silent, and possibly their silence is judicious.

Coins of Ch'in Dynasty, B.C. 221.

Figs. 48 and 49.—The inscription on these coins means "half a tael." This is the actual weight.

OBSERVATIONS.

Date, probably correctly stated by Chinese numismatists; value, probably its own weight in metal, now beginning to be a recognised medium of exchange.

The Ch'ins overthrew the Chows in B.C. 255. As previously stated, the Chows in the last years of their dominion had issued coins weighing three-quarters of a tael. (See Fig. 32.) It was in all probability in imitation of the *twelve Chu* (three-quarters of a tael) coins that the half-tael of the Ch'ins was issued. From this time forth, B.C. 221, for nearly twelve hundred years, coins, with the words "half a tael" engraved on them, were issued in great numbers. These latter coins do not, however, weigh half a tael; they are of various weights, down to one-tenth of a tael. The half-taels of the Ch'in are easily recognised by the metal of which they were made, in which there was an admixture of gold. The other "half-taels"—and the varieties are endless—for the most part very difficult to assign a date to.

Han Dynasty, B.C. 206 *to* A.D. 220.

The weights of Figs. 50 and 51 said to be not quite 8 chu. By this date the chu had decreased in weight. Weight about $\frac{1}{4}$oz., val. 20 = 1 tael of silver.

Figs. 52, 53, 54, 55, 56.—Half-taels. B.C. 179. Weigth, $\frac{1}{8}$ of a tael.

Figs. 57 and 58.—B.C. 140. Weight, $\frac{3}{32}$ of a tael.

Figs. 59 and 60 have rims. Some numismatists say these coins were only used by Government officials; others that 28,000,000 were issued. The 5 chu, like the half-taels, continued to be issued for several hundred years after B.C. 113. Most of

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* This character appears on ancient bronzed arrow heads.

the varieties are very difficult to date. From the metal they are made of I should say some were as modern as the 10th century of our era.

Figs. 61 and 62.—Ta Chuan Wushih. Large coins, "five tens." A.D. 9.

Figs. 63 and 64.—Ta Chuan Wushih. A.D. 9.

Chinese numismatists notice that in the previous five coins we have a reversion to the ancient form of writing.

In Figs. 64 and 65 we have the reversion to the ancient idea of charms or talismans. On the obverse of these coins is the representation of a sword, the constellation of the Great Bear, a tortoise, and a snake—that is, representations of the malign influences, and of the powers that counteract them.

Fig. 66.—Hsiao Chuan Chuh Yih. Small coin. Value, 1 tael. A.D. 9. Chinese numismatists say that at the same time this coin was issued there were also issued four coins, bearing on their face, "one ten," "two ten," "three ten," and "four ten" respectively.

[Drawings of these four coins are given in the book Ch'uan chi [illegible], Chapter 4, page 2.]

Figs. 67, 68, and 69 are called Wang mang knife coins, from the name of the emperor who issued them, and from their shape or inscription. The inscriptions on Fig. 67 are, a knife, "five hundred;" and on Fig. 68, a knife, "five thousand." On Fig. 68 the characters for a knife are of gold, inlaid; and on Fig. 69, a knife. On Fig. 70 the inscription is "Huo pu," lit., "goods, cloth, bale;" on Fig. 71, "Ta hwang pu tao," lit., "great yellow bale knife."

With regard to the former, Chinese numismatists say it was worth twenty-five of coins Figs. 72, 73, 74, or 75. With regard to the latter, they suggest as possible that "yellow" may have meant current, "bale" may mean worth, and knife with the dots may mean a thousand. I think it probable these coins may have been simply charms. The Chuan chi classes them neither with money nor charms, but in a separate category.

Ten other similarly shaped coins were issued at this time, said, by Chinese antiquarians to have been worth from 100 to 1,000 five-chu coins. (Drawings of these ten coins are given in the [illegible], Chapter 9, page 3.)

Huo Chuan. A.D. 9. "Goods coin." Figs. 72, 73, 74, 75, and 76, like the Pan liang (Figs. 50 to 57), and the Wu chu (Figs. 58 to 60, &c.) These "Huo chuan" continued to be issued for many hundred years. It is impossible to fix with accuracy the date of the extant specimens. Several are found among the Sung coins, which date from the tenth to the beginning of the thirteenth century. They must have been then current, though their issue had probably ceased before.

Fig. 77.—Pu chuan means "cloth value." The Chinese call this the "male coin." It is said that those who carry this coin on their persons will have male offspring.

Wu Chu. A.D. 25. Fig. 78.—See Figs. 58 to 60.

Wu Chu. A.D. 168. Fig. 79.—The four marks on obverse are said to be the four quarters (north, east, south, west) in which the coin was to be current. One numismatist remarks, "No sooner were these coins made than a rebellion broke out in the capital, and the coins were actually dispersed to the four quarters."

Debased coins. A.D. 210-220. Figs. 80 and 81.—Coins exceedingly thin.

Epoch called by Chinese Historians the Epoch of the Three Kingdoms, A.D. 221-419.

Figs. 82 and 83 have on face "one hundred five chu," meaning, probably, nominal value one hundred Wu chu coins, then current. Subsequently we find about 460 Wu chu worth 1⅓oz. silver.

The character on obverse of Fig. 82 is not understood. It looks like Wei ("to be"). On Fig. 84 the only inscription is "one hundred." On Fig. 85 only "five chu;" but the "five" is to the left instead of right. Others, like Fig. 82, but with other inscriptions on obverse, were issued.

Fig. 86 is slightly larger than Fig. 87.

Figs. 88 and 89.—It is said that similar coins, with barbarian characters on the obverse, were also issued. These coins were melted down (it is said) to make domestic utensils.

Tsin State. A.D. 265 to A.D. 419. Fig. 90.—The identification of this coin is very doubtful. It is believed to be one of two coins said to have been issued by the Tsins.

Epoch called by the Chinese Division of North and South, A.D. 386-618.

Other coins were also issued at these dates. The identification of them is doubtful. Inscription on Fig. 91, "four chu;" on Fig. 92, "five chu."

Figs. 93 and 94.—The characters on the face of these coins is Hsia chien, the title of the chief of the Sung in A.D. 454. This is the earliest instance in China of the now general practice of inscribing on a coin the name of the reign during which it is issued. Obverse, "four chu." (See Fig. 113.)

Fig. 95 has on it "two chu."

Fig. 96 has Chin gho, name of reign, chief of Sung, A.D. 465.

Fig. 97, said to have been issued in A.D. 491, after the model of Han coins. (See Fig. 59.)

On the obverse of Figs. 98, 99, and 100, the four marks, meaning the four quarters (N. E. S. W.), were probably put for luck sake. Besides the coins here represented the Liang dynasty issued an iron coin, the most ancient piece of Chinese iron I have seen. On the face of Figs. 99 and 100 is written "great pervading," "great felicity." Another coin has on its face "great happiness." These three coins were issued A.D. 524.

Fig. 101 has a rim both sides, and is called by the Chinese "the male five-chu." Coin Fig. 102 has no rim on the obverse. It is called "the female five-chu." Figs. 101 and 102 were issued A.D. 502.

Figs. 103 and 104, and various other varieties, with different dots and stars, were issued in A.D. 558.

Figs. 105, 106, 107, 108, 109, and 110 are ascribed to the Lian dynasty, with doubt. They are said to have been issued by private individuals. No. 107 has on it "five pearls" or "beads," not five 1/32nd of a tael.

On Fig. 108 is the inscription, "great peace one hundred cash." This is the earliest coin on which the modern character for cash appears. On Fig. 109, "great peace one hundred gold," which means "very valuable." On Fig. 110, "settled peace one hundred." These coins seem to have been used both as currency and for charms. Of these coins, Figs. 108 and 109, there are also two other varieties.

Fig. 111 is similar to Fig. 77. It is said to have been worth 100 smallest coins. In A.D. 562 a coin having "five chu" on it, with ten goose eyes (Fig. 106), was issued.

Fig. 112 has on it "tai huo lio chu," "great wealth six chu." Referring to the character for six , the Chinese say "it was remarked at the time that it looked like a man with his arms akimbo, weeping for the Son of Heaven, and, in fact, the emperor did die shortly afterwards."

Fig. 113 has on it "tai ho," the name of reign, and was issued in the nineteenth year of that period, *i.e.*, A.D. 486.

Figs. 115, 116, and 117 have on them "Yung an," and are said to have first been minted in 529, but as they were supposed to be fortunate coins they continued to be minted for about fifty years. Yungan is the name of reign A.D. 528 and 529. (Fig. 93.)

Figs. 118 and 119.—These coins were issued A.D. 554. On the face is, "continual peace five chu." On the obverse of Fig. 118 a representation of the sun, the moon, and the great bear. (See Figs. 64 and 65.)

Fig. 120.—When issued was issued for five-chu pieces. The inscription reads "Pu ch'uan." (See Figs. 77 and 111.)

Fig. 121 was issued A.D. 575 for ten five-chu pieces. The inscription reads "five elements great bale." It was repudiated in A.D. 579.

Fig. 122 contains the same inscription as Fig. 121. It was a medal rather than money. (See Figs. 64, 65, and 118.)

On Figs. 123, 124, and 125, which were issued A.D. 580, and are of whitish bronze, is the inscription "Ever pervade the myriad kingdoms." When issued they were supposed to be worth ten of Fig. 121. Another coin same as Fig. 124, but smaller, was issued about the same time.

Fig. 126.—On this coin occurs the words "Han hsing," the imperial title assumed by a member of the Chêng clan in A.D. 304. The Chêngs were of great stature, and were said to be descendants of giants fifty feet high. [Possibly the Greek legends of Titans reached China through Bactria and other of the Asiatic kingdoms founded by Alexander's generals.] The age of this coin is doubtful. I do not think it can be attributed to the Chêng state. Han hsing means "may the Chinese prosper." It is possibly an ancient charm.

Fig. 127.—The inscription reads "Fêng huo"—abundance. This coin is called a happy coin because the possession of it is said by the Chinese to confer happiness. It is almost certain that this is an ancient charm. Its date, however, is doubtful. The Chao was a race of foreign origin in Fokien. The coin may have been called a "Fu" (happy) coin, from its being found in Fu or Fokien.

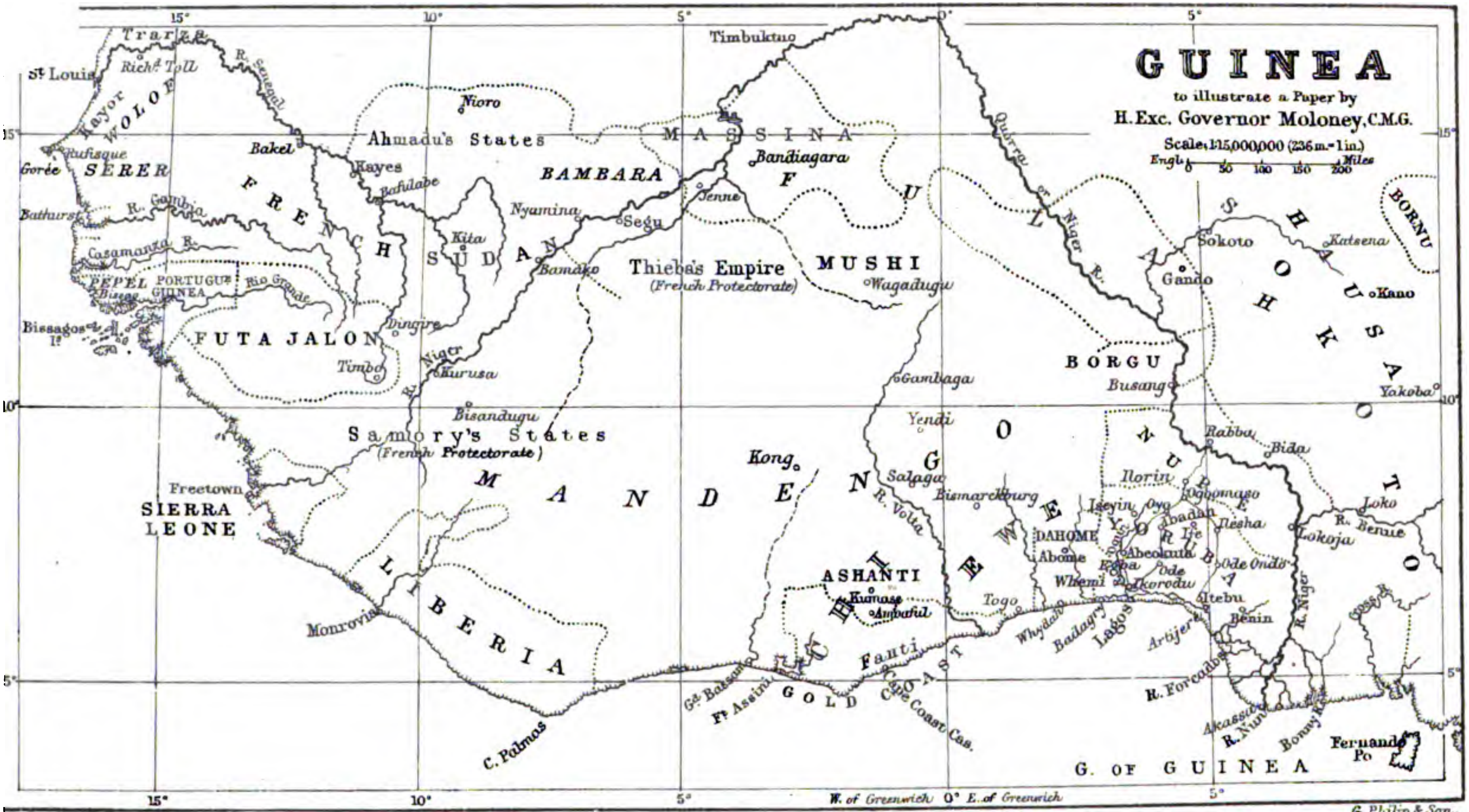
Fig. 128.—Some Chinese numismatists attribute this coin to the Kitan Tartars, who ruled in the north of China A.D. 916 to A.D. 1168. I have not seen the coin in question. The Chinese inscription is not only modern in form, but the expression in it, "Hsing pao" (current value) is modern. The form of writing closely resembles that of a coin of the Kitaru Tartars now in my possession, of the undoubted date A.D. 1083.

The Chinese regard the Chêngs, the Latter Chaos, and the Northern Yens as usurpers.

Figs. 129, 130, and 131 are called by the Chinese "Pai la wu chu" (white metal wu chu). They are of a mixture of brass, iron, and tin. At their first issue about 200 went to the pound avoirdupois. They were afterwards deteriorated till 800 went to the pound. Later on in this dynasty sheet-iron, leather, and pasteboard were made to serve as coins.

Tang Dynasty, A.D. 618-905.

During the time of the Tang dynasty the form of money now in use in China became prevalent. That in bronze or copper coins weighing each about the tenth of an ounce became the unit of currency. On the face of the coin are words showing the reign during which it is issued, and stating the coin is currency. By the tenth century the evolution of money in China had reached the modern stage in which it at present exists.



GUINEA

to illustrate a Paper by

H. Exc. Governor Moloney, C.M.G.

Scale, 1:15,000,000 (236 m.=1 in.)

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COTTON INTERESTS, FOREIGN AND NATIVE, IN YORUBA, AND GENERALLY IN WEST AFRICA—

ON THE EXTENSIVE EMPLOYMENT OF COTTON IN THE FORM OF A NATIVE MANUFACTURE, AS A CONVENIENT CURRENCY—AND ON THE REPATRIATION OF THE NEGRO, TO PROMOTE, ON ANY DEFINITE AND ESTABLISHED BASIS, THE DEVELOPMENT OF HIS OWN COUNTRY.—*(See Map.)*

By His Excellency Governor MOLONEY, C.M.G., of Lagos.

[Addressed to the Members in the Mayor's Parlour, on Friday, November 15th, 1889, at three p.m., His Worship the Mayor of Manchester in the chair.]

IT is indeed with pride and pleasure I find myself here to-day, in response to your invitation, to deliver an address on subjects of common and general interest to this great industrial centre. In these days of severe international competition—for it must be acknowledged we have ceased to be the commercial monopolists we have been, excepting perhaps Lancashire—it would seem to be a duty specially incumbent on us—indeed one that has become imperatively necessary—to consider, without loss of time, how, one and all, we can best serve the interests of those countries on which we depend, not only to get rid of our surplus manufactures, but also for the raw material for such.

It has therefore occurred to me that I should best serve Negro interests, and British so far as they are connected with Negroland, by submitting for your generous hearing some remarks on the cotton interests, foreign and native, of Yoruba and West Africa, on the *pagn* currency of the Gambia, and on the repatriation from the New World of the Negro, to promote on a permanent and extensive basis the development of his own country, and thereby British interests.

On the occasion of his visit in 1822-24 to Sockatu (Sockatoo), Captain Clapperton was favoured by Sultan Mohammed Bello, of Houssa, with a geographical and historical account of Takroor (*vide* Appendix xii. to "Discoveries in Africa," by Major Denham, Clapperton, &c.), in which we find mention of Yarba (Yarriba or Yoruba) as an extensive and interesting province flanked by the sea, and having an anchorage for ships of the Christians who visited the coast to purchase slaves obtained in Central Africa, notably Houssas, who were sold to the Yarbas, and by them resold to the Christians.

We also find in the same work a map of Central Africa, which shows the middle Niger, and fairly accurately the positions of Boussra (Boussah or Boussang) and of Yarba, with the direction of its trade route to the seaboard, which agrees with one that at present exists *viâ* Iseyin, Abeokouta, and Badagry—famous as the starting-point across Yoruba to Boussah of Clapperton and the Landers.

On the authority of Bello, the inhabitants of Yarba descended from the children of Canaan, who were of the tribe of Nimrod. They were driven into East Africa out of Arabia by Yaa-rooba, son of Kahtan, and they subsequently migrated westward and established themselves at Yarba.

Again, the name Yoruba is associated with Quorra (*goru*, river, in Fulah, and the affix *ba* great), viz., the people of the great river.

Among themselves, Yoruba is given as the name of a former king of one of its provinces, who succeeded to rule over all to which he gave his name. Yorubaland may be said to be now composed of the area situate south of the 9° of N. latitude, between the Ewe territory (Whemi or Dahomey) and the Niger main stream.

The territorial wedge situate between the Volta and Niger rivers is divided between the Ewe and Yoruba speaking peoples, the former occupying the western and the latter the eastern portion, contiguity being represented by the longitudinal line through the mouth of the Ajera or Giddy river, continued to the territory of the kingdom of Borghu.

The population of Yoruba is given as 3,000,000, its area as 25,000 to 30,000 square miles, and it may be compared in size to Belgium and Holland. Over it we have for years directed from Lagos our influence. Our relations with it have now been placed beyond dispute or foreign interference by treaties and otherwise. Such connection has been assured and confirmed by international understanding officially recognised.

The colony of Lagos, which is the seaboard of Yoruba, was acquired by treaties in August, 1861, and July, 1863. These treaties conveyed to Her Majesty the whole territories of the cedents. Later additions were made at the wish of the native authorities concerned as follows: kingdom of Katanu in 1879, of Appa in 1883, and of Mahin, Jakri, and of Sobo in 1885.

I may first remind you that an important, and indeed extensive, cotton native industry, both in the raw and manufactured form, proceeds along West Africa in the Volof, Mandingo, Tchi, Ewe, and Yoruba countries—that the export of the raw product gives no idea of the industry. But when we remember the millions of cloths turned out annually for their home consumption, of which little is generally known, we must recognise with appreciation the active industry of the natives in this one growth alone, and begin to consider, in these days of keen commercial competition for Africa's markets, whether Lancashire cannot replace this industry, and be thus the means to let loose the native energy confined thereto for more extended agricultural pursuits, of such moment to that continent, and indeed to us.

We find that the imports into the United Kingdom alone, of raw cotton, from British and foreign West Africa, for the five years ended with 1888, were a bagatelle compared with what they might be; when we remember that cotton grows luxuriantly in Tropical Africa—wild in many parts, in most cultivated mainly for its home consumption. The low prices realised since the American war, as also its inferior quality, have kept back the natives from the cultivation of cotton beyond their own requirements.

The Yoruba or Lagos cotton (*Gossypium herbaceum*) is brownish in colour, rough, and short in staple, and consequently does not command the higher prices of the market. The cotton of the West African Portuguese possessions—to wit Angola—is white, silky, and of good length in staple, and, when properly cleaned and prepared, is as valuable as American. To improve our West African export the Government of Lagos has introduced into the country, through its botanic centre, several species of the cotton-yielding genus *Gossypium*, such as Egyptian, Nankin, Garo Hill, Louisiana, Sea Island, Georgia, and New Orleans cottons. The short staple of the Yoruba cotton has told much in the past against its marketable value. The introduction of this special seed should result in the extensive growth in the country of a more valuable commodity, and enable the Negroes of British West Africa to compete on more even and encouraging terms with other cotton-exporting countries.

Against such imports from West Africa we must place the cotton exports thereto, in a manufactured form; and in doing so we must bear in mind that the largest supply of the raw commodity reaches this country from the United States of America, from plantations dependent mainly on the labour of Negroes, whose growth and future utilisation daily become, in their adopted country, a question of considerable political importance. In 1870 the coloured population of the United States which is not affected by immigration, was 4,880,009; by 1880 it had grown to 6,580,793, representing a growing factor, in the game of politics, not to be overlooked. Why cannot Negroes at home or repatriated from the States or Brazil work in their own country? And thus, why cannot we help our colonies and the mother country to be self-supplying and self-supporting?

Manufactured cotton goods exported from this country to West Africa take the form of piece goods, plain and printed, bleached and unbleached, printed and dyed, twist and yarn, thread, &c., and for the past five years have represented values as follows:

1884	£1,345,593	1887	£995,908
1885	890,099	1888	1,025,680
1886	780,699		

These figures, which should have been more than double, had cotton in its manufactured form been up to its former standard of quality, are made up as follows as regards British and Foreign consumption.

1884	British	£591,884	1886	British	£336,869
„	Foreign	753,709	„	Foreign	443,830
1885	British	£388,104	1887	British	£432,259
„	Foreign	501,995	„	Foreign	563,649
1888	British	£485,789			
„	Foreign	539,891			

Here I may explain that in piece goods printed the excess in the Foreign over British consumption may be found to lie. At the same time the former heading is general, and includes not only the foreign possessions, but also other parts not strictly so designated, embracing the British protectorate of the Oil Rivers and the Territories of the Royal Niger Company.

These figures speak for themselves of our cotton monopoly in West Africa. How long such monopoly may continue is another question, and must depend upon ourselves.

The colonial distribution of the British consumption has been—

COLONIES.	1884	1885	1886	1887	1888
	£	£	£	£	£
Lagos	225,112	193,782	138,183	177.128	192,896
Gold Coast	153,429	95,534	99,182	91,499	116,260
Gambia, Sierra Leone	213,343	98,788	99,504	163,632	176,633
	£591,884	£388,104	£336,869	£432,259	£485,789

Again, for the same period the consumption of the foreign West African possessions was—

FOREIGN POSSESSIONS.	1884	1885	1886	1887	1888
	£	£	£	£	£
Spanish Possessions— Fernando Po, &c.	1,173	1,267	1,433	607	763
French Possessions— Goree, Senegal, Gaboon, &c.	69,676	47,414	30,111	50,759	61,897
Portuguese Possessions— Loanda and Angola, &c.	174,205	153,486	187,882	198,204	94,011

The balance, which I subjoin, represented the value of cotton goods exported to West Africa, not particularly designated, which I may again explain includes the German possessions, the British protectorate of the Oil Rivers, and the Territories of the Royal Niger Company—

1884		1885		1886		1887		1888
£508,655	...	£299,828	...	£224,404	...	£314,079	...	£383,220

In view of its comparative growth and small area, the cotton business of Lagos (and Yoruba), of all our British West African possessions, is the best and most promising.

The raw cotton exported from Yoruba through the colony, during the last thirteen years, and the direction of export, are given in the following table—

COUNTRIES.	1876	1877	1878	1879	1880	1881	1882
Great Britain ...lb.	418,650	531,600	133,950	24,300	6,000	163,950	450,450
Germany .... „	81,150	12,000	...	...	...	...	...
France .... „	56,550	55,050	...	...	...	...	...
Total ....lb.	559,350	598,650	133,950	24,300	6,000	163,950	450,450

COUNTRIES.	1883	1884	1885	1886	1887	1888
Great Britain ...lb.	409,746	530,414	278,694	96,980	116,375	203,687
Germany .... „	1,626	...	156	...	5,360	27,741
France .... „	162	...	...	...	...	...
Brazil .... „	...	...	...	...	...	56
Total ....lb.	411,534	530,414	278,850	96,980	121.735	231,484

In connection with the *pagn* currency, I would invite your attention for a short time to the native manufacture, on the river Gambia, of cotton cloth, generally known as *pagn*, which seems anglified from the French *pagne*, said to have its origin in the Volof *M'pendal*. Women wear each two, *m'pendal* and *seurre*, the former for the lower, the latter for the upper part of the body. In addition to a loin cloth, the men use each one *pagn* (*taray-laye*). Beyond their use for daily wear these pagns serve as do our bedclothes.

Among the Traza Moors and others, who inhabit the area north and east of the Senegal river, the *pagn* is often made of the hair of the camel and other beasts. It is woven in primitive indeed looms, often found described in books of travel on West Africa, from country-grown cotton, among the Volofs, Fulahs, Mandingoes, and Sereres. Coverings of grass, woven or plain, or of skins of animals, are used among the Pepels and others occupying the rivers that debouch near the Bissagos Islands.

The importance of this cotton growth, and how great a part as a manufactured article of consumption it may play, should be well weighed by such an industrial centre as Manchester. Near to the West African coast, where European and American thread, yarn, and silk penetrate, are found mixtures of native and foreign manufactures. In addition to their costume requirements, Gambians manufacture a sufficiency for an extensive native currency, known as the local pagn currency. This stock represents the output of the spare time of Negresses and their slaves, and is regulated by the fact that their wealth is invested chiefly in slaves and cloths, which go largely to represent their capital. Wearing cloths fetch sometimes as much as £20 each.

A distinction in name, price, and description is recognised locally in the currency of the upper and lower river, chiefly as follows:—

LOWER GAMBIA.	Value recognised.	UPPER GAMBIA.	Value recognised.
Bandy cloth	2s.	Bandy cloth	2s.
Bassa fanno	6s.	Coorombo	2s.
M'Bake (Jung Jung) 4s. and	8s.	Fanni Fing	4s.
Nuty Fing	6s.	" "	6s.
"	8s.	Gasay "	6s.
M'Bake	12s.	Fanni	8s.
M'Dore	12s.	Fattah	10s.

LOWER RIVER PAGNS.

Bandy Cloth: An unbleached cloth of cotton, measuring from 5 to 5¼ inches in width and a fathom in length. Eight fathoms make a pagn, the current value of which, on the river as well as at Bathurst, is at the rate of 3d. a fathom or 2s. a pagn.

Bassa Fanno: A bandy cloth pagn of the usual size, stitched together and dipped in weak indigo dye preparation. It is of the same value as the bandy cloth.

M'Bake: The 4s. M'Bake is a pagn of light blue colour.

Jung Jung or Spotted Cloth: The same as the M'Bake as to colour, but spotted, which is effected by beeswax or some vegetable preparation. The word *jung jung* means spotted.

Nuty Fing 6*s.*, *Nuty Fing* 8*s.*: Single blue pagns, but distinguishable by the degree of colouring, the latter being a shade darker than the other.

M'Bake 8*s.*: Is of the same make and dye as the 4s. M'Bake. This is, however, of larger size, measuring generally about 9 feet in length, and from 4 to 4½ feet in width. Generally made in pairs and used exclusively by men.

M'Dore: The same as 8s. M'Bake, but distinguished by coloured stripes of white and blue in the centre. This pagn varies in price from 12s. to 24s. a pair, according to the dye, the degree of colouring enhancing the value. Another distinction of these pagns, which are usually sold in pairs, is that one pagn is generally made wider than the other. The wider is used for wrapping round the lower part of the body, and the other for wrapping about the upper part.

UPPER RIVER PAGNS.

Bandy Cloth: Manufactured in the same way as the Lower River bandy cloth, already described, but generally the Upper River bandy cloth is narrower and coarser. Bandy cloths are the small change in the currency of the river. In fathom lengths at 3d. each, they are used in the same way as small silver in more favoured parts.

Coorombo: This is an eight fathoms bandy cloth pagn, stitched together, but not dyed. Value 2s.

Fanni Fing, 4*s.*, 6*s.*, 8*s.*: It is a blue pagn, the price varying according to the degree of dye.

Gasay Fing: It is a light blue pagn, manufactured of native white and dyed blue cotton yarn, mixed together previous to undergoing the usual process of dyeing.

Fattah: It is a pagn of light blue, mid blue, and dark blue colours on one side, and altogether dark blue on the other side. It has coloured stripes straight along its length. This is effected by stitching seams all over the pagn previous to dyeing, the seamed parts presenting a striped light colouring after the dyeing process is complete.

Cousaba and Desir: There are other pagns of the Upper River not included in the above list. The *cousaba*, used exclusively by females, is of the deepest blue colour, approaching to black, glazed with reddish tints. The value is 12s. The other, *desir*, is also a female pagn of deep blue colour, but with long fringes at both ends, and varying in price from 12s. to 24s.

The weavers are generally known among Mandingoes as *dareelah*, and among Volofs as *rabar-kat*. Their chief industry is weaving. When not so employed, many become for a time *gryots* or wandering minstrels.

The currency pagns change hands as, or in exchange for, cash or home goods, and are received from time to time as such by merchants and traders. The age of the article does not, as a rule, affect its current value. I was indeed surprised in 1885 to learn at Bathurst that there were in the mercantile houses currency pagns to the value of over £60,000. Fancy the anxiety of the possessors of such old clothes, and the labour and expense of keeping them free from damp and moth. True, such an exceptionally large deposit was due to failures of the crop, represented by the one staple, the ground nut, from excess of rain or drought, and somewhat to the guerilla warfare that prevailed.

Pagns are sold by length and not by weight. They are unsized, substantial, and of great durability—conditions that should weigh with home manufacturers, if they aim at replacing generally this native industry, and thus setting free for other agricultural work the thousands of hands employed now as weavers.

In the interest of the native farmer—for Lagos oil, as you will remember, used always to hold the first place in the market for purity and value—of the manufacturer, of conscientious traders, agents, and merchants, to guard against a further continuance of fraud upon customers, and to protect honest commerce, at the beginning of the present year it was considered by the Legislature of the Colony of Lagos that the time had arrived for the enactment of legal measures, more searching than had hitherto existed, for the repression of the rapidly-increasing practice of adulterating produce. As examples of these fraudulent practices, I may mention the adulteration of palm oil with agidi (ground Indian corn), causing a considerable increase in bulk and deterioration in quality; the mixture of cotton seeds with cotton, to increase the weight and lessen the labour of production; and the addition of palm-nut shells to palm kernels, for similar reasons; as well as the open and scandalous practice of soaking the kernels before bringing them to sale, thereby causing a great temporary addition to the weight at the expense of an ultimate loss of 15 per cent of their value in Europe. To such an extent had this unsatisfactory state of affairs increased that the credit of Lagos as a source of valuable produce was seriously affected, and it was found necessary to pass a law, entitled "An Ordinance to Prevent the Adulteration of Produce."

This ordinance seems to act well and to be in a fair way to put an end to the evil against which it was directed. That the necessity for it should have arisen shows the difficulty of preventing the ruin of native commerce by the ill-directed greed of those most deeply interested. At the same time, I cannot but think that the system which has hitherto existed on the part of ourselves of supplying goods to the traders, or middlemen, of the coast, prepared in a manner calculated to deceive the producer of oil, kernels, and cotton in the interior, has had much to do with the origin of these frauds, and I am emboldened to mention this fact in a meeting composed, perhaps, in part, of the manufacturers and merchants of Lancashire, by the consideration of the ruinous results to our cotton trade in other parts of the world which have arisen from this practice. In Central America—I have it on the authority of an eye-witness—the Indian asks for, pays for, and sees that he gets, American drills and bafts, leaving to the Negro mahogany cutters, who are supplied on the truck system, and have therefore little or no option, the cheaper and more pretentious English goods. The reason of this is that the American goods are strong and free from size. I believe that I am not wrong in saying that a similar result has been observed in China, where we have been obliged to imitate the American cloths in order to compete with them. If I am wrong in this, you will doubtless be able to correct me. In East Africa, Thomson, in his work on the "Central Lakes of Africa," asserts that the natives of Zanzibar buy mainly "Merikani" cloth, leaving the inferior English goods to the Arabs, who trade with the interior, and whose method of persuading the more innocent native to accept such goods as they may choose to offer is well known. My fear is that this, which is one of the apparently inevitable results of a business carried on through a number of native middlemen, each of whom has to make his profit out of the goods which pass through his hands, and the last of whom is often an Arab or a native king—distributing the goods with more or less of compulsion—should affect to a really serious extent the sale of our goods in the markets of the interior of Africa. The result of this would be that the African would cease to buy European goods, and would go more actively to manufacture his own grass and cotton cloths, which even now are in great and increasing demand among the natives of the coast, in consequence of the greater liberty of purchase enjoyed owing to the comparatively recent introduction of cash payments for produce at the ports and less distant markets. Having freedom of choice, the native is rapidly reverting to the use of his own strong country cloths. We cannot blame him for it. Country cloths are now exposed for sale in every market-place beside the European goods, and are not unlikely in time to beat them out of the markets near the coast.

The above facts will also go far to explain why, in self-defence, adulteration has been resorted to by the native dealer who attends the produce markets of the interior—for, mark you, the interior natives do not resort to such practices. They would not dare to. Only men do it who have been in contact with the coast civilisation. The distrust in which they are now held by the producer is such that they are at many markets obliged to pay for their produce in English silver currency, with which the native buys such goods as suit him best, and, for preference, native goods. Within measurable distance of the coast distributing centres, the system of direct barter, which used to rule in Africa, will soon no longer exist.

As Ife, in Yoruba, is supposed by the natives to have been the cradle of the human race, white and black, so it is generally believed in the country that we English want palm oil; that we cannot do without palm oil; that, in fact, there is nothing else but palm oil. Its rivals in the form of petroleum, tallow, cotton-seed, linseed, and ground nuts, are comparatively unknown to them. They cannot appreciate the variations of supply and demand, and, consequently, of the European market. They cannot understand how it is that some years back they got in goods the equivalent of £52 per ton for their oil, while at present they do not get half so much. They believe there is something wrong somewhere, and they expect and demand the same number of pieces of cloth which they did when the price was what I have mentioned. Instead of educating the native up to a sense of appreciation of the variation of European tariffs, he has been deceived by quality, and short lengths, strengths, weights, and measures. I have already shown that we cannot urge in our defence that the native gets what he asks for. The native who buys such goods takes good care to make no use of them himself. He buys them to pass on to the more ignorant producer of oil and kernels, who does not want them, but has to take what he can get, as he cannot both make oil and manufacture cloth.

Take cotton goods, for example. The trade used to deal in pieces of so many yards made up of so many yard-folds. The native goes by weight and folds. What does he know of our standard?—that 36 inches go to a yard? Well, there was introduced, and still continues, the practice of importing finished pieces made up into the same number of folds as before, but having each fold some inches short of 36. Such pieces seem to be chiefly composed of size, on a slender basis of cotton, and can, like the proverbial umbrella, only be used in sunshiny weather, in a country which has a rainy season extending over five or six months, with an average total rainfall approaching 100 inches. As for washing, such goods, when washed, would make in Yoruba excellent, though fragile, sieves, but are quite useless for the purpose of covering the human body.

I am told that the two finishes of the trade are known as the farina finish and the salt finish, chalk and starch forming the basis in each, and that the former is applied to goods for West Africa. On one occasion I inspected at Government House, Lagos, two pieces of white manufactured cotton, each of 24 yards, made up in 30 folds. The lighter one, which weighed five pounds, had cost, landed at Lagos, 6s. 10d.; the heavier one, of eleven pounds, cost 6s. 3d. The former, though of superior quality, realised only 7s. 3d.; the latter, though resembling brittle paper more than cotton, and of much inferior quality, fetched 9s. 6d. This will somewhat explain how the standard has gone down since 1884 to meet local expectations, which, it must be remembered, are merely those of the coast middlemen who get rid of such rubbish at the interior markets, where it is palmed off on the natives *nolentes volentes*.

The following data will give you some particulars of the length reductions and depreciation in value, of the articles of the drygoods trade since 1883:—

Articles.	Length, 1882-4.	Selling Price.	Length, 1888.	Selling Price.
Grey bafts..................	28 yards	8/-	24 to 25 yards	3/6 to 4/-
Satteens	"	20/-	"	9/- to 10/-
Madras	8 hks.	8/- to 9/-	...	4/- to 4/6
Croydons	28 yards	7/6	24 to 25 yards	3/6 to 4/-
Blue regattas	"	10/-	"	4/6 to 5/-
Fancy drills	"	9/-	"	4/6 to 5/-
Fancy ticks	"	8/-	"	4/- to 4/6
Waste check...............	"	10/-	"	6/-
Corded bafts...	"	14/-	"	5/6 to 6/-
White brilliant............	"	16/-	"	6/6 to 7/-
Red satteens...	"	12/-	"	5/6 to 6/-
Scarlet flannel	25 yards	20/-	23 yards	11/-
Patent velvet	...	4/- per yard	...	2/3 to 2/6
Fancy prints..	28 yards	5/-	10 yards	2/6 to 3/-
Striped domestic	"	9/-	24 yards	4/6 to 5/-
White pique brocades...	"	25/-	"	9/- to 10/-
White brocades	"	20/-	...	6/6 to 7/-

May I be excused if I express a hope that the statement of a record of so disastrous a policy will lead to its abandonment by those whose interests are concerned, especially as the "Adulteration of Produce Ordinance" bids fair to put a stop to similar measures on the part of the natives?

As one strongly interested in Yoruba, I cannot but express myself strongly on a subject of such vital importance to the trade of that country, as well as to the British manufacturer.

I may further mention that retail hucksters have felt obliged to continue the deception by the use of so-called yard measures of so many inches less than the standard measure—32 inches being the now accepted standard yard in many of the native markets. From the above facts, the necessity for the extension to the colony—which has been done—of the Merchandise Marks Act becomes manifest, as also of a Weights and Measures Ordinance—enactments which, I trust, will prove sufficient to balance evenly the scale as regards the protection of honest importers and consumers.

We know that the Niger has been, and continues to be, the high road of Mohammedanism from North and East Africa. Its active pioneers and advance guard on Yoruba have been the Peuls or Fulanis, who have in the past overrun and subjected most of the country on the middle stream, and have so far succeeded in considerably contracting the area of Yorubaland, which, though divided tribally and dialectically, has a common national tongue and a recognised feudal head in the person of the Alafin of Oyo, who is on the best of terms with the government of Lagos—as are, indeed, all the Yoruba native states.

This is important information for the cotton industry. In Sir Francis Burton's "Wanderings in West Africa," written in 1863, he gave the Mohammedan population of Lagos as 700 to 800. In 1881 it reached 12,023, and it may be said now to be about 15,000. Islamism grows apace in West Africa, and with it a demand for Manchester cotton; for, be it remembered, each Mohammedan, or person who dresses after the Mohammedan fashion (and there are thousands of such natives) has two or three complete costumes each year, and one costume takes from 40 to 50 yards of croydon, where cloth of native manufacture is not used.

In Yoruba the dress of an ordinary male Mohammedan consists of trousers, vest (*togo*), gown (*agbada*), cap and turban; and takes from 45 to 50 yards per suit, of which he is said to have two or three each year. The lady's costume consists of a cloth (*kijipa*), cover cloth, head tie, and *ashibon* covering, and takes about 33 yards. With an allowance of three suits in each case per annum, of croydon material, we should have a consumption of 250 yards for a male and female couple, or 125 yards per person, which at 4s. per 25 yards would equal £1 a head. Now the population of Yoruba is given at 3,000,000, and the trade routes *viâ* Busah and Rabba connect that people with the Mohammedan states flanking the Middle and Upper Niger, and therefore the cotton demand is trivial compared with what it may become.

I remember conveniently that I noticed, in the Church Mission Atlas, that there were in Africa 50,416,000 Mohammedans, and 144,472,900 pagans, so you must acknowledge the enormity of the work Lancashire will have, if we succeed only in securing a continuance of our cotton export monopoly.

With Lagos the trade routes through Yoruba to the Niger are: (1) Abeokouta, up the Ogun River, Iseyin, through the Borgu or Barba country to Busah or Busang on the Niger. (2) Abeokouta, Oyo, Ogbomaso, Ilorin, and Rabba, on the Niger. (3) Ikorodu or Ode Ketu (in Jebu), Ode, Oru, Ibadan, Ilorin, and Rabba. (4) Artijere, Itebu, Ondo, Ilesha, Ilorin, and

Rabba. (5) Benin, through the countries of the confederation known as Ekitiparapo, Ilorin, Rabba.

As I have on more than one occasion explained elsewhere, these routes vary in length from 200 to 300 miles, are long and well-established, and connect populous centres, which any railway system contemplated should do.

An occasion such as this allows me to inform you that what is commonly known as one (*Eriodendron anfractuosum*) of the silk cotton trees is found all over West Tropical Africa, but its cotton yield is put to no export use. Compare the growing consumption of this commodity under the name of *kapok* in Holland, Belgium, and Germany, where it is imported from the East, and used for upholstery purposes, fetching, unprepared, up to 30s. per cwt., and prepared up to £5. Its import into Holland alone in 1877 was 510,230lb. It is now over a million. *Kapok* introduction into this country may deserve commercial attention.

Now, in view of the recent general emancipation of the slaves of the Empire of Brazil, which was most enthusiastically celebrated in Lagos in September and October, 1888, and of the well-known desire on the part of many of them to follow in the steps of their fellow-countrymen who have returned to their fatherland in West Africa, and especially to the country of the Yorubas, the memory of which is still fresh in the hearts and minds of many of them, it has occurred to me that a clear statement of the extent and nature of the advantages to be derived from a commercial enterprise founded upon the necessity which exists for their continued transport to West Africa may serve as a sufficient inducement for those who are interested in the advancement of the Negro, and through him of tropical Africa, to attempt a commercial enterprise in the form of the establishment of steam communication between Lagos and the Brazilian coast.

Local experience of the industry, intelligence, and character of such settlers in the past makes it clear that the general prosperity of the country would be materially increased by a timely encouragement of this noble work of repatriation. An extended influx of skilled agriculturists, craftsmen, and mechanics could not fail to improve the general prospects of the land of the Yorubas and of West Africa generally. Their past sufferings in distant lands cannot but make them eager to avail themselves of the opportunity of returning to the home of their fathers in numbers proportionate to their own means, to the help given them and to the means of transport available. From the intelligent competition of those who have already repatriated the peoples of West Africa have everything to hope and nothing to fear.

According to the census returns of 1872, Brazil had then a population of 9,700,187, of which more than one-seventh, viz., 1,476,567, were slaves. The Brazilian Legislature, by its Act of the 12th May, 1888, has done justice to Africa and restored to their natural and rightful freedom nearly 1,000,000 Negroes, and has thus killed slavery in the New World.

And who are those persons who have at last received their natural rights, and what was their servile work? They are Africans—thousands of them Yorubas—many of whom have retained or learned their own language, who themselves, or their parents before them, were cruelly robbed in the past from the west side of the African continent to take, on the plantations of the New World, the place, as slaves, of the aborigines of the country, whose almost complete extermination is already a matter of history.

What has been the result of their labour? Why, that to-day, notwithstanding her comparatively small population and correspondingly small cultivated area, Brazil is rich in the export of coffee, sugar, cotton, tobacco, maize, and other commercial commodities, especially of the three first named.

When we look to Brazil, the agricultural and commercial development of which has been the work of trained Negroes, what do we find? That there was exported into the United Kingdom in—

	1887. £	1888 £
Rubber	1,605,115	1,604,108
Cocoa	49,738	27,631
Coffee	1,096,395	491,622
Cotton, raw	1,544,616	1,103,534
Cotton, seeds	76,572	93,207

All these products—I may except cocoa, which thrives, however, in West Africa, as if it were indigenous—have their home in West Africa. Their development is a problem of the present and future.

In addition to what we have from time to time read, we know by results that a strong desire of repatriation has ever possessed African slaves not born in Brazil. Many associations have been there formed for years past for the purchase of the freedom of African slaves and for their restoration to their native country. Although they began to repatriate first about 1840, they did not, in view of the notoriety of Lagos, Whydah, and the mouths of the Niger as slave ports, do so in any number before the cession to the British Crown of Lagos in 1862. That Government wisely set apart for them a district in the island of Lagos, and many of the streets in Lagos, viz., Pedro Street, Martin Street, Bamgboshe Street, &c., have been named after them. Of repatriates from Brazil there were 1,237 in Lagos in 1871, and about 2,732 in 1881. From April, 1883, when a proper record began to be kept in the Customs, there had arrived, at the end of 1888, 489, making a total of 3,221. I would estimate that there are in Yoruba now about 5,000 repatriates. These repatriates are an orderly, industrious, settled, and highly respectable portion of the community, and present generally praiseworthy examples as citizens. To West Africa—we are here especially interested in Yorubaland, the prosperity of which, as of other parts of the world that have been cursed in the past by slavery, must depend on vested interests in the soil, to be brought about by the creation of peasant proprietorships—the development of agricultural interests is of the greatest moment. In furtherance of such, the repatriation from Brazil of mechanics and trained cultivators of the soil is specially desirable, and should receive all encouragement. Again, such repatriates have represented, and will, admirable centres for the diffusion among their less developed countrymen, of their enlightenment and cultivation.

Apart from considerations of the substantial advantages to be derived from an increased immigration of intelligent settlers into our colonies and the neighbouring kingdoms, I have been led by a careful study of the details of the intercontinental trade, between Brazil and Lagos during the past six years, ended with 1887, to the conclusion that there is every prospect of a successful and profitable issue to an enterprising attempt to encourage, by steam communication and moderate rates of freights and fares, the repatriation of the lately liberated Africans. Of their eagerness to return to the homes of their ancestors there is sufficient evidence from more than one authority. The difficulties at present placed in their way by an infrequent, dilatory, and inconvenient means of transport alone prevent them from leaving in large numbers a land in which they are strangers and unwilling colonists.

The trade connection is, indeed, encouraging, when we bear in mind the slow, uncertain, and insufficient means of communication that has obtained and obtains.

During the six years ending on the 31st of December, 1887, 28 sailing vessels entered the port of Lagos from Brazil, and 27 cleared for Brazilian ports, giving an annual average of 4⅔ entries and 4½ clearances in connection with this trade. The vessels which arrived from Brazil were of a total tonnage of 4,728 tons, and earned, it is estimated, the sum of £21,508 for freights and £2,742 for fares, making a total of £24,250, or a yearly average of £4,041 gross earnings on the outward voyage. The 27 vessels which cleared for Brazil were of a total tonnage of 4,520 tons, and earned, it is estimated, the sum of £6,802 for freights and £1,716 for fares, making a total of £8,518, or a yearly average of £1,419 gross earnings on the homeward voyage.

The tonnage here given represents registered capacity and freight, has been calculated at so much a package on the current tariff of sailing vessels, as given hereunder:—

FROM BRAZIL.

Rum, per pipe of 100 gallons	30s.
Tobacco, per roll of 25 lb.	4s.
Tobacco, per band of 3 rolls, or 75 lb.	10s.
Beef, per bag of 120 lb.	8s.
Coffee, per bag of 50 lb.	8s.
Cases (of various sizes)	3s. & 6s.

TO BRAZIL.

Palm oil, per puncheon of 200 gallons	28s.
Barrels (any size)	10s.
Kegs (any size)	3s.
Calabashes, in bundles of 100	6s.
Kolah nuts, per 1,000	2s. 3d.
Cloths, of country manufacture, each	1d.

The number of passengers from Brazil to Lagos reached, for the same period, and by the same opportunities, a total of 457, or an average of 76 per annum, and from Lagos to Brazil, 286, or an average of 47 per annum. The total number of passengers carried both ways was 743, or an annual average of 123, and the amount paid by them for fares amounted to £4,458, or an annual average of £743. The total amount received for freights was £28,310, or £4,718⅓ per annum. The gross total receipts for freights and fares amounted to £32,768, or an annual average of £5,461⅓.

It is clear from the above-quoted figures that the germs of a considerable trade along this route already exist, and require only favourable circumstances to develop in a satisfactory manner. As has been already pointed out, it may be reasonably inferred that the amount to be derived from fares would increase to an unknown extent with the advent of increased facilities for transport. Indeed, it seems not unreasonable to suppose that the sum to be realised from passengers' fares would be multiplied many times, were steam communication to be established. Again, we must not lose sight of the probable supply of free Negro labour to Brazil under contracts of service. A considerable increase may be anticipated by the substitution of steam for the sailing service.

Upon examination of the nature of the trade carried on by the sailing vessels at present employed on this route, it appears more than likely that several of the articles dealt in would become considerable factors of commerce, if carried by steamers. The demand for kolah nuts, for example, is reported to be at all times considerable in Brazil, but in view of the slowness of the passage, as at present made, the duration being any time between thirty and eighty days, and the difficulty of keeping them in marketable condition, the value has at no time during the past six years exceeded £3,563, while in 1887 it sank as low as £304. Shea butter also, though exported to the value of £161 in 1883, sank in 1887 to £29. The use of African native cloths has grown to a fashion in Brazil. Among the imports from Brazil, the most important seem to be rum, cigars, and tobacco. It is unnecessary to say that the exceptionally depressed state of trade prevailing in 1887 affected, to a marked extent, this, as all the branches of commerce upon which the colony depended. Indeed, irregularity of communication has in the past given this trade a peculiarly unstable character. Placed on a firm basis, however, there would seem to be excellent prospects of a rapid development in the imports above mentioned, especially when it is taken into consideration that the market for imports from Brazil is already established in the colony of Lagos.

The monthly expenditure on a pioneer steamer of, say, for purposes of calculation, 150 tons burden, should not exceed £350, including wages, victualling, coal, insurance and depreciation. The prime cost of such a vessel is best known to those who are engaged in similar enterprises, but putting it at £5,000, and the working expenses at £4,200 per annum, an annual balance, supposing the trade at present existing to be monopolised, as in all probability it would be by such an enterprise, would be £1,261, in return for the capital invested, giving a rate of interest of over 25 per cent upon the original outlay.

These facts show that it is worth while to consider seriously the advisability of embarking upon this enterprise, and I take accordingly advantage of this favourable opportunity to publish the facts I put before you, which bear upon the subject, sincerely trusting that so important an opening for British trade and shipping will not be neglected.

The estimated values of imports and exports to Brazil were, for the period touched upon, as follows:—

Year.	Imports from £	Exports to £
1882	16,948	16,177
1883	16,455	6,083
1884	16.925	10,401
1885	18,983	10,764
1886	17,761	6.455
1887	16,738	3.930
	£103,810	£53,810

The Tchi country has been from time immemorial notorious for its gold yield; its seaboard has been appropriately called the Gold Coast; its auriferous wealth has been placed beyond dispute; the known area of the metal is small compared with what it will become. Foreign mining enterprises that have of comparatively recent years been undertaken in the country have not met with the return that was expected. I may repeat here what I have always maintained, that by native agency alone can the agricultural and mineral wealth of the country be developed. For some time foreign supervision will be necessary; but even for such time skilled labour, capable of withstanding the climate, must be had. Hundreds of Negro miners now in Brazil, skilled and able men, who have been trained under Cornishmen and others, offer. I have had it on good authority that since the general emancipation last year of the slaves in that empire, the Negro miners do not care to pursue their old occupations. Here is another inducement for the establishment of steam communication between Brazil and West Africa.

For the opening up of tropical Africa the general introduction of Chinamen continues, I notice, to be advocated by some ignorant of the lesson of experience and regardless of all respect for aboriginal rights. I recently satisfied myself in Paris that the experiment has met with so much success in Senegambia as to induce the French Government to decide that it is not to be repeated.

It must be acknowledged that the value of our possessions, in their work of development, must depend on their trade; which means an open and settled interior. Cut them off from the interior, and they are practically blocked and cramped as regards progress, and are occupied in struggling to meet the bare cost of their administration. Connect them with the interior by a policy based on consideration, conciliation, agriculture, and the repatriation of Negroes from the western hemisphere, and their future will be indeed great and far-reaching.

By native agency alone can tropical Africa be gradually and definitely developed on any permanent basis, and for what has been so far done in Gambia, Sierra Leone, Liberia, and the *ex* Slave Coast, the credit must be largely given to the so-called creoles, but more aptly called repatriates or their enlightened descendants. For the development of the Congo and East Africa the question of the introduction of repatriates is now being wisely and justly considered.

It has been questioned why West Africa has not made more progress in the march of civilisation; and we naturally ask ourselves what have been the causes that have acted against the development that was hoped for. As regards Yoruba, I would just make mention of the evil and emasculating consequences of slavery, in its export and domestic forms. In the words of Sir Thomas Fowell Buxton, when he advocated the total emancipation of Negroes in our colonies, it was slavery that debarred them from acquiring industries; it was slavery which prevented them from exercising the virtues of foresight and prudence; it was slavery which left them nothing to care for; it was slavery that took away from them all the incentives to industrious labour, and debarred them from all the ties of social intercourse. When we remember the small percentage of people that represents owners, we have to acknowledge that these causes still oppose development. Time alone will rehabilitate the Negro in his manliness.

The Government has never lost sight of the original objects of the acceptance of the cession of Lagos, viz., to assist, defend, and protect the inhabitants to put an end to the slave trade, not only within the area ceded, but in the neighbouring countries, and to prevent intertribal wars.

So far as the colony and protectorate of Lagos are concerned, this policy has been carried out; but the features of the surrounding independent countries have not altered as much as we could have desired. The removal of an institution such as domestic slavery, that has become so interwoven with the society and commerce of those countries, is difficult; but it is undeniable that the congestion has been relieved, and that such relief unmistakably proceeds. That slavery is not tolerated within Her Majesty's dominions is widely known throughout Yorubaland, and that England abolished slavery in 1834 in her colonies, at very great cost to the British taxpayer, is gratefully acknowledged in the country by thinking people.

The reckless and sometimes immoral systems of credit that prevailed and the occasional gullibility of the British merchant or manufacturer have helped to stop the way. Further obstacles that have blocked progress are the altered relationship between owner and former slave, the independence of the latter when compared with his former grovelling position, doubt of result or use of independence secured with abolition, doubt in minds of native authorities of consequence of any action they might initiate, non-existence of free labour markets, short-sighted policy, from whatever cause, of keeping closed the rivers that intersect the country, and intertribal differences, jealousies, and feuds. The removal of such blocks has been and is the aim of the Government. They cause from time to time much commercial interruption and general anxiety. They are, however, gradually disappearing. Foremost have also been the Dahomian raids, which, as regards the southern half or more of Yoruba, have ceased since 1875, in consequence of the then determined and salutary action of the Government.

In retribution for the past, and to safeguard the output and spread of our own trade in the future—for it must be acknowledged that Africa alone remains, or is likely to, a free market of promising expansion for our manufactures—the Negro must be educated industriously, and otherwise, through himself, but with the generous help of Europe and America. The repatriation of educated and industrious Negroes from the New World is the grand problem of future Africa, and a promising opening for such on an assisted scale offers both in the United

States of America and in Brazil. Such Negroes are required for the establishment of civilising centres, for the spread of the industries they have learnt in the western hemisphere; they are to be the educators of their less enlightened fellow-countrymen; they should be the true and effective crusaders in and amongst their own fellow-countrymen against slavery. They have the advantage of homogeneity, and enjoy a common language. Their weapons must be their love of country, their enlightenment, and their industries.

Again, it must be remembered that "come and take" has been the motto and creed of the European commercial men who do business with West Africa. They represent generally absentee landlords, and are represented by European agents under contracts of service for short periods, whose aim and object is naturally to make as much as they can for their employers and themselves within as short a space of time as they can. All profits are taken out of the country. Nothing therefrom is locally spent for its benefit. In a land where the cowry shell is the recognised general currency, these gentlemen represent the convenient medium for the payment in money of the low taxes that are imposed by the Government, and fall on the people of Yoruba and little on the inhabitants of Lagos colony, a fact sometimes overlooked.

Lastly, it is acknowledged that, in primitive countries such as are embraced within and adjoin our West African colonies, it is the duty of the Government to initiate, as regards advertising, the capabilities of the country represented by its products. The people are industrious in their own fashion, and, although their present wants are small, they are ready to follow examples set, and to develop industries once they are informed thereon, and learn to appreciate their value. We want new staples of trade and larger areas of demand for our wares. Such can only be obtained by developing the resources of the country and by introducing alien botanical products suitable for growth in West Africa, and of marketable value. Our eggs-in-one-basket-policy must be discontinued. Towards such an end a botanic centre has been established in the Colony of Lagos for the education of the native in the direction of developing the resources of his own country, and to serve as a distributing centre of economic plants, for on the agricultural development of the country must the future of tropical Africa for many years depend.

Towards the eradication of domestic and other slavery, and in the restoration to Africans in Africa of that liberty for which they themselves have so long struggled and at last gained, the *emancipados* of Brazil and the Negroes in the United States of America can and will represent powerful contingents. The commercial prosperity which they have given to Brazil and the United States let them help to have extended to Africa, by the development there, with their free labour, of the same industries that brought it about; and as the centre of new industries let them look upon the Lagos botanic centre, where they will also find nursed for them coffees, cocoas, cottons, and other useful economic plants.

I have perhaps said enough on the feeling of repatriation among the Negroes of Brazil. In proof of the patriotism of the Negroes of the United States I cannot do better than read a letter that has been placed in my hands by that dear old gentleman, the Right Rev. Dr. Crowther, Bishop of the Niger:—

Northfield, Minnesota, U.S. of America,
Sept. 11th, 1889.

Right Rev. and Dear Sir,—There is forming here a company of people, earnest and industrious, with a view of going out as a colony to Africa. They have not yet determined to what part of that great continent they will go, only that they have resolved to settle somewhere near the West Coast. It is with a view to gathering information that I make bold to write this to you. Would you advise us to go to the region of the Niger? and if so, is there any special section where you could and would advise as a settlement? There will probably be about one hundred families in all, representing the general crafts and trades. It is the desire of these to settle in some region somewhat removed from the sea, yet near enough to carry on commerce with Europe and this country. Such region must have water for man and beast, pasture and woodland, located sufficiently high above the sea level to escape malaria. In such a country we wish to settle permanently. Do you know of any such to which you could advise us to go? And if you do know of it, what would be the articles which could be raised there? What would be the prevailing vegetation? Would there be wood there for building purposes? About what is the average temperature? For the purposes of cultivation what would you advise us to bring—what grain, what fruits, what implements? Would it be best to import horses or cattle? Under what government should we be? Should we be best protected as American citizens?

I beg your pardon for sending this long letter, but I know not to whom else to write, and we shall feel very thankful to you for any information which you may give us.

I am a priest of the Church, under good Bishop Whipple, and these people will be nearly all Church people. Whatever your letter may bring us, we shall feel deeply grateful to you for it all.—Your servant in Christ,

Geo. H. Mueller.

Right Rev Bishop S. A. Crowther, D.D., Bishop of the Niger.

To adapt to Yoruba the memorable words of one of India's best Governor-Generals (the late Earl Mayo), when he expressed his belief in the advantage of Governmental example in the direction of the establishment of model farms, I will conclude by saying that for generations to come the progress of tropical Africa in wealth and civilisation must be directly dependent on her progress in agriculture. Agricultural products must long continue the most important part of her exports, and the future development of Africa's commerce will mainly depend upon improvement in the quantity and quality of existing agricultural staples and of the exports from this country, and on the introduction of new products, which shall serve as materials for manufacture and for use in industrial arts.

The Proposed Congo Railway.—The survey for the proposed railway between Vivi and Stanley Pool, along a route to the south of the river, is now completed, and the report of M. Cambier, as given in the "Mouvement Géographique," adds considerably to our knowledge of the topography of the region which has been thus surveyed. While the old caravan route runs approximately parallel to the Congo, and crosses its affluents near their mouths, the proposed railway route either crosses the rivers near their sources or keeps on the divides between these river-systems. Thus the deep gullies and valleys are avoided, gentle slopes prevailing on the plateau. Considerable difficulty was encountered in climbing the high land, which falls abruptly to the river. It was found impossible to ascend it by one of the tributaries of the Congo coming from the south, as they run through inaccessible gorges. But a depression was found a short distance below Matadi, from which point the proposed route ascends the highland. The road will cross the tributary Mpozo on a bridge, and after having avoided the plateau of Palabala by a detour to the south, it takes an E.N.E. direction, until the river Lukunga is met. It seemed at first as if some difficulties would be encountered here, but the reconnaissances of the engineers showed that the valley of the river takes a north-easterly turn, and thus they were enabled to follow its left bank without crossing it. It is stated that no serious obstacles are encountered between the bend of the Lukunga and the Inkissi, the country consisting of hills intersected by small ravines. Between the proposed route and the Congo rises the plateau of Ngombi to an altitude of 1,600 feet. This part of the country is intersected by deep valleys. The Inkissi, at the point where the route crosses it, is about 350 feet wide. East of the Inkissi the population becomes less numerous, and the country is more elevated and sandy. The heights of the hills are clad with forests, and deep ravines intersect the slopes of the plateaux. Approaching Stanley Pool, the line has to pass over hills about 300 feet above the Congo, which are traversed through narrow and tortuous valleys. Later surveys show that a better line may be found further west. In the meantime the establishment of a regular connection with the Upper Congo by means of oxen is contemplated, the Sandford Exploring Expedition and the Belgian Company being united for the purpose of establishing regular commerce with the Congo basin.—*Proceedings of the Royal Geographical Society, February, 1889.*

M. Trivier's Proposed Examination of the Lukuga.—M. Trivier, a French explorer, left some time ago for Brazzaville and the Congo. He intends to proceed to Nyangwé for the purpose of carefully examining the west shore of Lake Tanganyika, and exploring the upper course of the Lualaba, and other feeders of the Congo. M. Trivier does not believe that the Lukuga is the real outlet of Lake Tanganyika, and proposes, therefore, carefully to explore its source, and also to discover if there is no other outlet. M. Trivier believes that if the observations of Mr. Stanley are correct, the Lukuga would have ceased to flow long ago, seeing that the level of the lake is rapidly falling. It may be stated, however, that according to Captain Hore's observations, the bed of the Lukuga is a deep layer of mud which is being washed away, and that it will discharge the waters of the lake until the rock is reached.—*Proceedings of the Royal Geographical Society, February, 1889.*

ON THE MELODIES OF THE VOLOF, MANDINGO, EWE, YORUBA, AND HOUSSA PEOPLE OF WEST AFRICA.

By His Excellency Governor MOLONEY, C.M.G., of Lagos.

[Addressed to the members at 7-30 p.m., on Friday, Nov. 15th, 1889, the Rev. S. A. Steinthal in the Chair.]

I HAVE been somewhat exercised in mind to explain to myself why I appear before you this evening and am thus privileged to address so distinguished an audience. Fortunately I remember that my attention was called to some encouraging and generous references, that appeared in September last in the public press, to a musical paper I was allowed to give to the British Association that met at Newcastle this year. It was at the time suggested that I should be induced to repeat my musical entertainment under the name of the "Moloney Minstrels." It is scarcely necessary for me to explain that I alone personify the body this evening, and am as to my complexion *au naturel*, although you may reasonably wonder why after all the years I have succeeded in surviving the West African climate, I do not present a darker appearance.

I can only presume that, in view of Lancashire's desire to be on the closest and best terms with the Negro, this great industrial centre thinks it cannot do better than encourage the musical talent of his country, and thereby aboriginal fashion and variations of costumes, and thus have an eye to business, and furnish an increased demand for cotton goods. Again I recall that this afternoon I ventured to explain, to a critical but kind audience, how the whites and blacks, short-sightedly, vie to outdo each other in the commercial game of barter. To bring them into more harmonious and sensible relationship, I thought I could not do better than soothe you in such a direction by some of their melodies.

With your permission I will distribute them geographically under (1) Gambia, (2) Ewe or Dahomey, (3) Yoruba, and (4) Houssa. Under the first division we shall hear short snatches of Bambarra, Mandingo and Volof airs, which are both vocally and instrumentally rendered in those countries.

Under division (2) we have the more stirring airs of the notorious Dahomians, influenced doubtless by the predominant part taken in the country by the ladies, who are said to far exceed the men in numbers. This sad sexual disproportion is not confined, I fear, to Dahomey. You have doubtless heard of the Dahomian Guards, composed of so-called Amazons, or women soldiers, of whom it is said there are 5,000 to 6,000.

They are the mainstay of Dahomian power, and are described as generally superior to the men. Each carries, on service, a musket and short sword, and wears a uniform. "The bouncing Amazon, your buskin'd mistress, and your warrior love." Among the Dahomians vocal music is chiefly resorted to, accompanied by the monotonous sound of the drum, horn, or rattle.

Next, under (3), comes Yoruba, which seems to have no instrument with any pretence to a scale The voice is the only musical channel or instrument, associated, as in Dahomey, with some monotonous or drowning accompaniment.

The Houssa melodies and their instruments show the warlike spirit and intellectual advance of the nation, and their wordings the Mohammedan conversion of the country by the Fulahs, Here we find more developed instrumental music.

In most of the works of travellers in West Africa we find references to the musical capabilities of its peoples. For such airs as we find set to music, the different missionary bodies who labour there must have most credit, as they have also for their invaluable work represented by the committal to writing of the various vernaculars spoken along that coast.

The Volof or Jolof speaking people cover the area lying between the rivers Senegal and Gambia, and extend eastward several degrees of longitude. Next to them comes, south, behind Sierra Leone and Liberia, the region occupied and influenced by the Mandingo nation, whose tongue is of considerable importance and wide range.

Both the Volof and Mandingo nations are now Mohammedan, and their musical capabilities are superior, perhaps, to those of the other nations touched upon in this paper, although the Houssa would run them close.

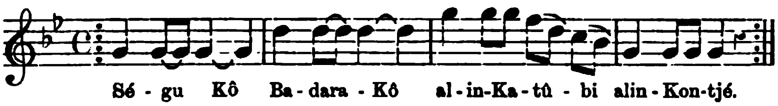
There was at the Colonial and Indian Exhibition of 1886 a most interesting contribution of their instruments, of which I would mention—

		MANDINGO.	VOLOF.
Big Drums	There are several kinds	Tang-tang	Sabbar.
Small „		—	Goring.
Harp		Korah	Kotah.
Guitar (four kinds)		Conting	Harlain.
Violin		—	Rutu.
Harmonicon		Ballah	Ballafon.
Flute		Griali-toh	Lutey.

The wandering minstrels amongst these peoples are known as *Gryots*.

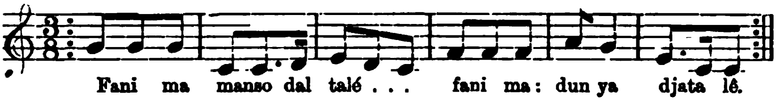
[Here were played melodies Nos. 1 to 8.]

1.—BAMBARRA (*Mandingo*) AIR.


Sé - gu Kô Ba - dara - Kô al - in-Ka - tû - bi alin - Kon-tjé.

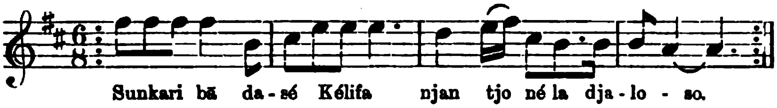
i.e.—The King of Ségu said to the King of Bambarra: "Submit (become Mahom.) or fight."

2.—MANDINGO AIR.



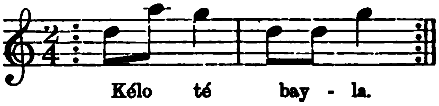
i.e.—The good father, the king, said, { Oh ! the world is beautiful.
i.e.—Life is sweet.

3.—MANDINGO AIR.



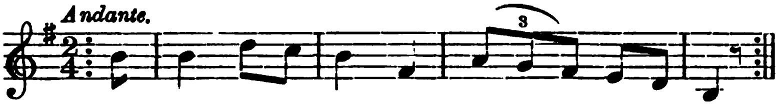
i.e.—Sunkari Ba, royal prince, come, give to thy musicians.

4.—MANDINGO WAR SONG.

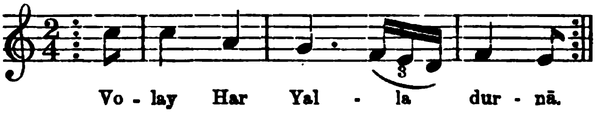


i.e.—There will be no lack of fighting.

5.—MANDINGO AIR.

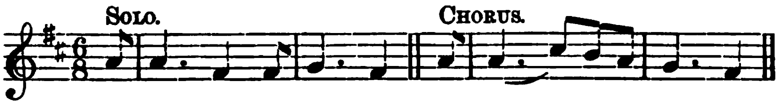


6.—VOLOF AIR.

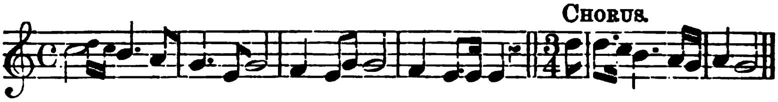


i.e.—Hurrah ! Har-Yalla (a name) has been delivered of a child.

7.—VOLOF AIR.



8.—VOLOF AIR.



Bowdich, in his "Mission to Ashantee," and Cruikshank in his "Eighteen Years on the Gold Coast," dwelt on the love for music of the Tchi (Fante and Asante), and on their excellent ear. Their songs are described as recitative, and more frequently than not improvised, their subjects being dependent on and influenced by surrounding and current circumstances, running in the groove of ridicule, sarcasm, or flattery. Among their instruments we find drums of different forms and sizes, the guitar-like *sancho*, the flute, the horn, gong-gongs, rattles, castanets, &c.

So far, have you recognised any similarity between these and Scotch and Irish melodies? I remember on one occasion, after the Ashantee War (1873-4), remarking to a prominent Coomassie prince that their fetish proved of little avail against the British power. He replied that the Ashantees were not singular in their fetish: that the English had a bigger intermediary, near which he himself once stood in the greatest awe, in the forest near to Amoaful. He described this fetish as appearing in the form of a white man, with his arms a-kimbo as if blown out, his cheeks puffed up, and of such continuous motion as made him seem to grow bigger and bigger. He advanced fearlessly against the fire of the Ashantees—*for true this was a big fetish.* I showed my Coomassie friend a picture in *Punch* of a Highland piper, which he at once recognised, with some show of excitement, as his fetish friend. It will be remembered by many that in the battle of Amoaful, in the Ashantee War, the 42nd Regiment formed the advance guard, and mainly bore the brunt of the first severe fighting. What astonished the Ashantees, who fought behind or from trees or low-lying scrub, was to see company after company of the 42nd, each with its piper playing at its head, march across an open piece of ground in the teeth of the enemy's fire.

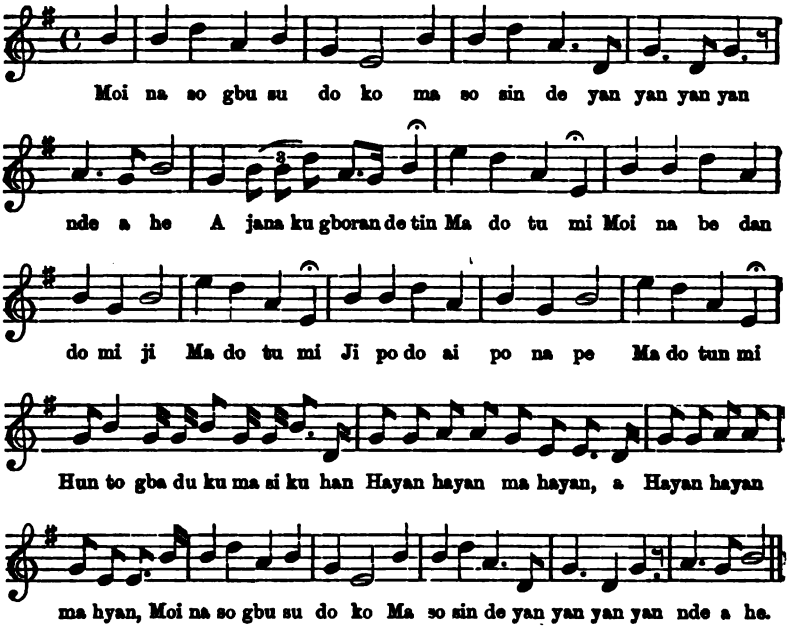
A curious view they took also of our land telegraph wire. According to the Ashantees we were strangers in the country; and as we did not know the route through the forest to Coomassie, the wire was erected, and chiefly connected by the growing trees, along the main road, to show us the way back to the coastline, where was our base of operations.

Further east and south, we find references to the Ewe or Dahomey music in Skertchley's "Dahomey as it is," as also in Burton's "Mission to Galele," where notice is taken of their drums, horns, gong-gongs, and gourd rattles. According to the former author, vocal and instrumental music is not indulged in together by the same person in Dahomey.

[Melodies Nos. 9 to 12 were here given.]

9.—A DAHOMIAN WARRIOR'S SONG.

Dahomey Air.

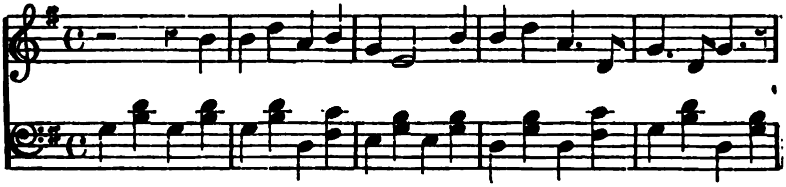

Moi na so gbu su do ko ma so sin de yan yan yan yan
nde a he A jana ku gboran de tin Ma do tu mi Moi na be dan
do mi ji Ma do tu mi Ji po do ai po na pe Ma do tun mi
Hun to gba du ku ma si ku han Hayan hayan ma hayan, a Hayan hayan
ma hyan, Moi na so gbu su do ko Ma so sin de yan yan yan yan nde a he.

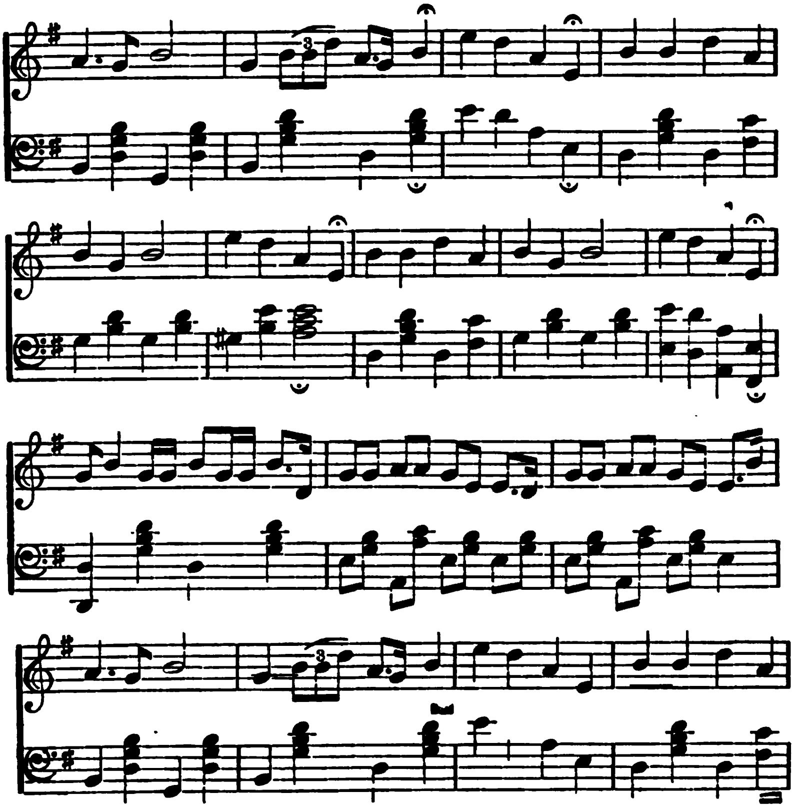
Moi na so, gba su do ko—ma so sinde
Yan yan yan yan nde ahe
Ajanaku gboran de tin—ma do tu mi
Moi na be dan mi ji—ma do tu mi
Jipo do aipo nape—ma do tu mi
Hunto, gba duku masiku han
Hayan hayan ma, hayan a hayan hayan ma hayan
Moi na so gba su do ku ma so sin de
Yan yan yan yan nde ahe.

When I have my gun loaded
I will not fear anything.
It is ready, it is ready, that is something!
If the men are as huge as elephants
I will fire my gun at them.
If they are as frightful as snakes
I will fire my gun at them.
If the sky and the earth meet together
I will fire my gun at them.
Drummers on that day, never fear of death,
Hip, hip, hip, hurrah! Hip, hip!
When I have loaded my gun I will not fear anything.

A DAHOMIAN WARRIOR'S SONG.

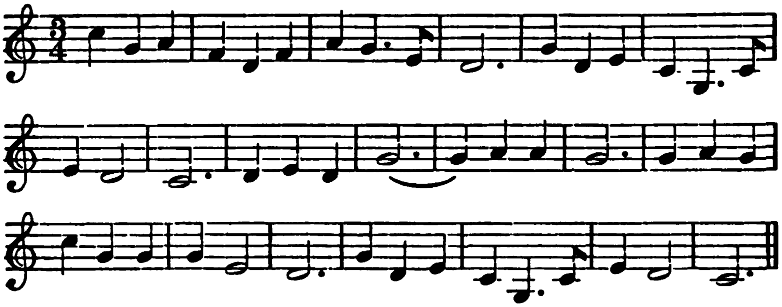
Dahomey Air. Set to an accompaniment.





10.—“KERE-KERE.”

Popo Song.



Aganran lo m'ohùn odide O	The green parrot knows the voice of the parrot.
Iya axé la b'odide sore O	The parrot's mother has made friendship with the parrot.
Iyen ro ma no si re	That does not suit you.
Aganran lo m'ohùn odide O	The green parrot knows the voice of the parrot.

Awa of'ese te nyin pa O
Enyin ko to olnyè
Enyin ko to loti bo wa ja
Awa of'ese te nyin pa O

Ota mbe Etu mbe O
Enyin ko to olnye
Enyin ko to loti bo wa ja
Ota mbe Etu mbe

Aguda a de o anea de O
Ero 'wa wo ime oko
Aguda a de O
Konigbaybe orno olose O
Of'ori ya 'gbo l'Agado

Ayando ko gbé le oko moju mo
Oni on oso 'leke loni O
Aiye re O oko gbo ri O

We shall crush you to death with our feet.
Ye cannot cope with us !
Ye cannot cope with us in a conflict !
We shall crush you to death with our feet.

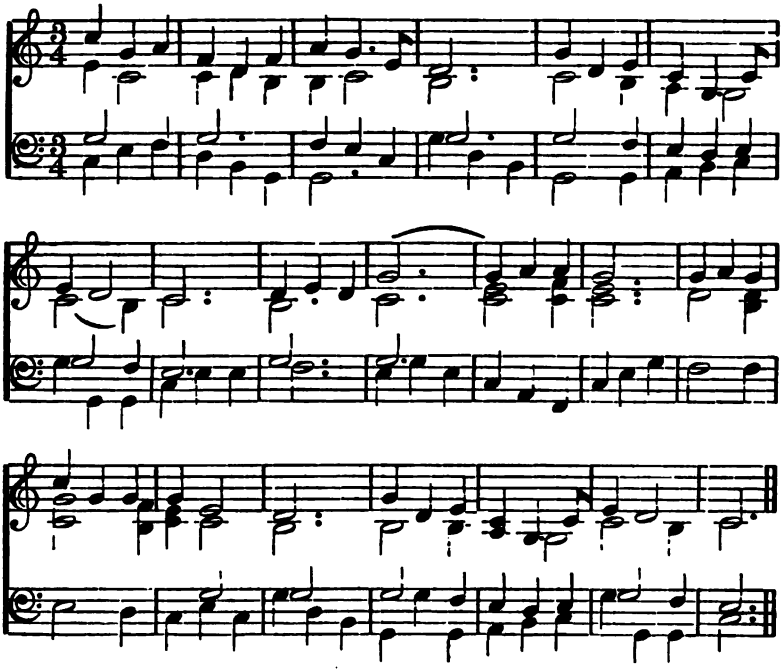
Shot is there, powder is there.
Ye cannot cope with us.
Ye cannot cope wsth us in a conflict !
Shot is there, powder is there.

O Portuguese ! we are come, we are come.
Passengers are come to view the ship.
O Portuguese ! we are come.
Konigbaybe, the son of the soap-seller,
Has broken Agado's fence with his head.

Ayando remains not in her husband's house till dawn of day,
She says she will tie her head to-day.
This is a wide-world saying, we have never heard it before.

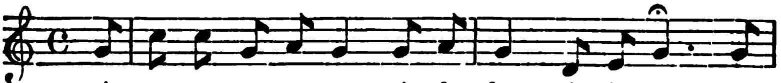
"KERE-KERE."

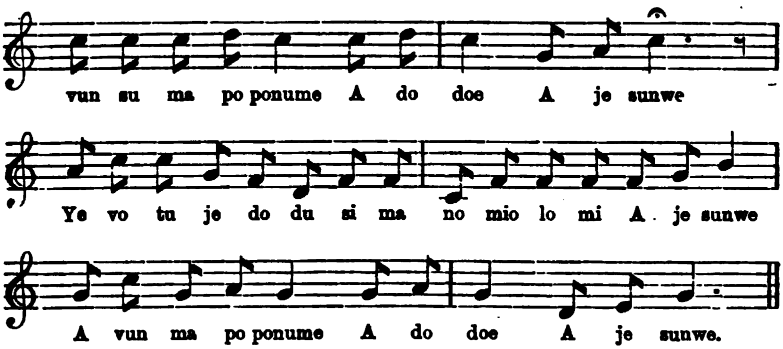
Popo Song. Set to an accompaniment.



11.—LITTLE POPO *(Dahomey)* SONG.

Parabolic.



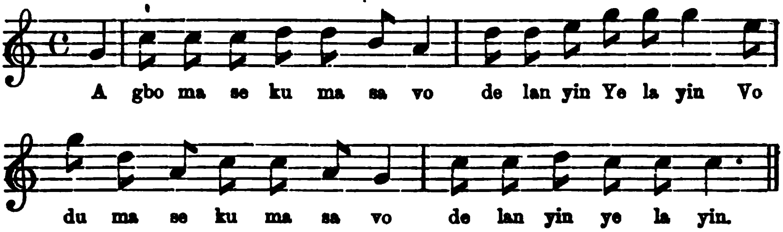

vun su ma po ponume A do doe A je sunwe
Ye vo tu je do du si ma no mio lo mi A . je sunwe
A vun ma po ponume A do doe A je sunwe.

Avun su ma po pon ume
Ado doe a je sunwe
Avun su ma po pon ume
Ado doe a je sunwe
Ye vo tu jedo du si
Ma no mio lo mi
Aje sunwe
Avun ma po pon ume
Ado doe a je sunwe

A dog cannot look at a leopard's eye,
It is a lie.
White man's gun can be fired with the right or left hand,
It is a lie.

(This is said of an enemy who cannot stand before his opponent.)

12.—LITTLE POPO *(Dahomey)* SONG.


A gbo ma se ku ma sa vo de lan yin Ye la yin Vo
du ma se ku ma sa vo de lan yin ye la yin.

Agbo ma seku ma savo
De lan yin ye la yin
Vodu ma seku ma savo
De lan yin ye la yin

A ram never hears of death and gets frightened.
What will be, let it be.
Fetish never hears of death and gets frightened.
What will be, let it be.

I beg to preface my later remarks by explaining that the territorial wedge lying south of the ninth degree of north latitude between the Volta and Niger rivers, on the West Coast of Africa (I speak generally and linguistically) is divided between the Ewe (Whemi or Dahomey) and Yoruba speaking peoples, the former occupying the western and the latter the eastern part. Yorubaland may be said to be now comprised within the area situate between Dahomey territory and the Niger main stream, the Nun.

Yorubas, although they have many songs, are comparatively unacquainted with musical instruments, if we except the drum.

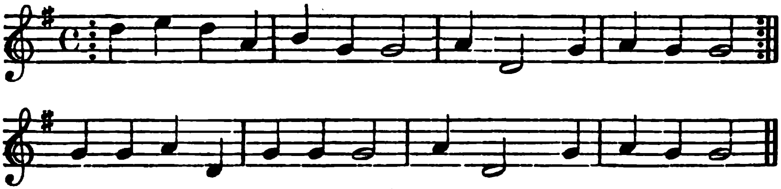
In the country are to be generally found itinerant drummers and singers. Their vocal effusions, confined as a rule to the compass of a few notes, and noisy and monotonous as they sometimes are pronounced, are usually accompanied by the drum, or by a set of drums, by the clapping of hands, or by the beating of time on some stick or on their tongueless native bell called *agogo.* The principal amusement of the youth of Yoruba is to dance to the beat of a drum, which serves as an accompaniment to song on the occasion of festivals, of great ceremonies, at births, marriages and deaths. "I have known that there was no musick with him, but the drum and fife."

[Melodies Nos. 14 to 17 were next given.]

14.—"TANI KPÉ Á O NI BABBA."

(Who says we have no father?)

Yoruba.

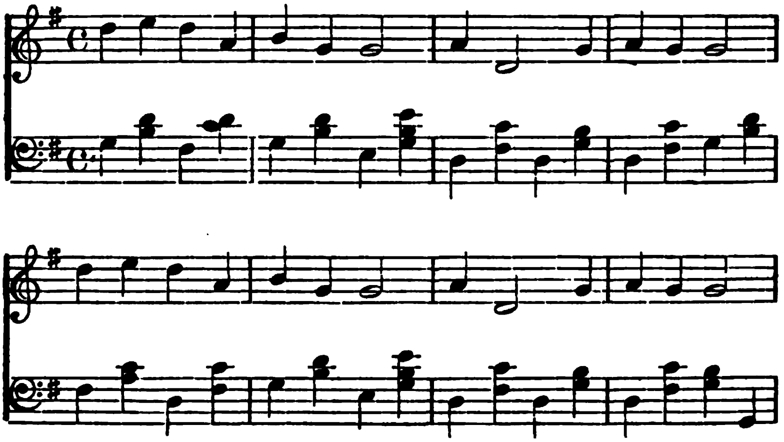


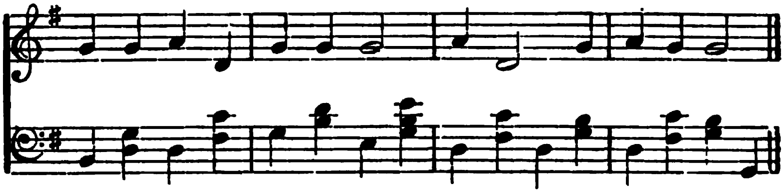
Tani kpé á o ni babba,	Who says we have no father?
Sayi! a ni babba,	Hurrah! we have a father.
Oba Moloney babba wa,	Governor Moloney is our father.
Babba leyi babba lohun,	Here is a father, there is a father.
Sayi! a ni babba.	Hurrah! we have a father.

"TÁNI KPÉ Á O NI BABBA."

(Who says we have no father?)

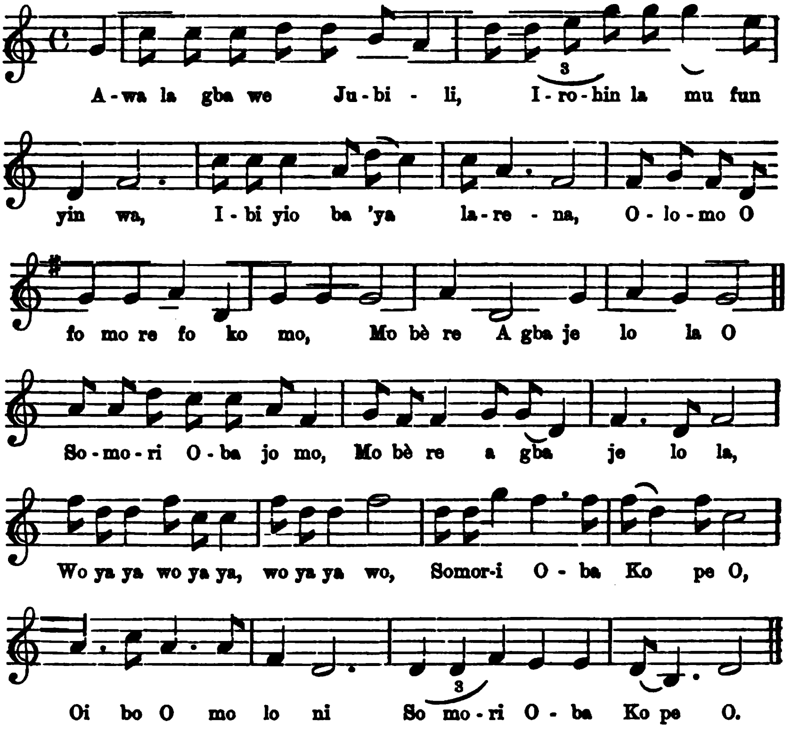
Set to an accompaniment.





15.—"AWA LA GBA IWE JUBILI."

Yoruba.—Lagos Song in connection with the Queen's Jubilee.

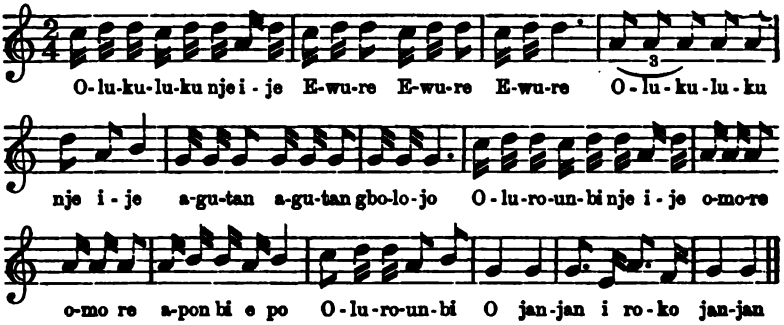

A - wa la gba we Ju - bi - li, I - ro - hin la mu fun
3
yin wa, I - bi yio ba 'ya la - re - na, O - lo - mo O
fo mo re fo ko mo, Mo bè re A gba je lo la O
So - mo - ri O - ba jo mo, Mo bè re a gba je lo la,
Wo ya ya wo ya ya, wo ya ya wo, Somor-i O - ba Ko pe O,
Oi bo O mo lo ni So mo - ri O - ba Ko pe O.
3

Awa la gba 'we Jubili
Irohin la mu fun yin wa
Ibi yio ba 'ya la rena
Olomo o fó mo re f'oko mo
Mo bère Agbajelola O
So mori Obajomó
Mo bère Agbajelola
Wo ya ya wo ya ya
Wo ya ya wo
Somori Oba kõ pé O
Oibo Omoloni
Somori oba ko pé O

'Tis we who receive the Jubilee Book;
'Tis news we bring for you.
Evil to the mother of an agent to the espoused!
The parent won't give her child to the husband.
Oh! I ask for Agbajelola,
The fashionable belle.
Shout aloud! shout aloud!
Shout aloud—shout!
Fashionable Governor, live long!
White man Moloney—
Fashionable Governor, live long!

16.—A FABULOUS SONG.

Yoruba Air.

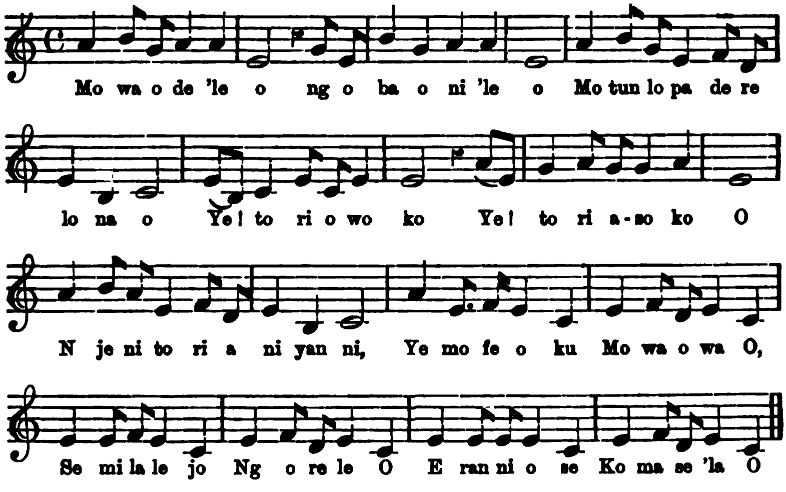

O-lu-ku-lu-ku nje i - je E-wu-re E-wu-re E-wu-re O - lu - ku - lu - ku
3
nje i - je a-gu-tan a-gu-tan gbo-lo-jo O - lu-ro-un-bi nje i - je o-mo-re
o-mo re a-pon bi e po O - lu -ro-un-bi O jan-jan i ro-ko jan-jan

Olukulùku nje ije ewure, ewure, ewure,
Olukulùku nje ije agutan, agutan, gbo-lo-jo,
Oluroun̄bi nje ije omo re omo re, aponbi epo,
Oluroun̄bi o jan jan iroko jan jan.

Everyone makes promise of a goat, [sheep
Everyone makes promise of a sheep, a fat
Oluronbi makes promise of her son, as
yellow as palm oil,
Oluronbi o jan jan iroko jan jan.

17.—"MOWA O DE 'LE O."

Yoruba Song. Ibadan.


Mo wa o de 'le o ng o ba o ni 'le o Mo tun lo pa de re
lo na o Ye! to ri o wo ko Ye! to ri a - so ko O
N je ni to ri a ni yan ni, Ye mo fe o ku Mo wa o wa O,
Se mi la le jo Ng o re le O E ran ni o se Ko ma se 'la O

Mo wa o de 'le o,
Ng o ba o ni 'le o,
Mo tun lo pade re lona o,
Ye ! 'tori owó ko,
Ye ! 'tori aso ko o,
Nje nitori aniyan ni :
Ye ! mo fe o ku,
Mo wa o wa o,
Se mi lalegò,
Ng o re'le o ;
Eran ni o sè
Ko ma se 'la o.

I seek you at home,
I do not meet you at home,
I go again to meet you on the road—
Ah ! not for the sake of money,
Ah ! not for the sake of clothes,
But on account of anxiety.
Ah ! I have missed,
I come to find you,
Treat me hospitably,
I am going home ;
You must prepare meat,
You must not prepare Okro.

The public singers are called *Akronin*, *Akewi*, and *Onirara.* They are classed as beggars, as are drummers and other musicians in West Africa. Their occupations are hereditary. Singers work in couples, sometimes more. They rely on their vocal powers, in the channel of abuse or flattery, for their maintenance.

In Yoruba a drum is called generally *Ilu*; its head, *Awo-ilu*; drumstick, *Igi-ilu*; and a drummer, *Onlù.*

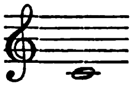
The shells of drums are generally hollowed out from the wood of the *Emi*, the shea-butter tree, *Bassia Parkii*; sometimes from the silk cotton tree, *Bombax* or *Eriodendron.* Their manufacture is a special industry confined to a class. The completion of the drum devolves upon the drummer as regard its heads and bracings, for which sheep, kid, deer, and calf skins are used.

Drummers never accompany their playing by singing themselves. Their aim seems to be confined to imitating by clearness of sound and precision of notes on their instruments, the wording of songs so far as their accents through such a medium can convey. They consider they can make the wording of a song recognisable merely from its air. In support of their conceit they have a saying, "Alu dundum ki gbe orin"—"The player of the dundum never joins in the song." Such musicians consider they can make their instruments speak. Do we not hear similar expressions at home on musical talent?

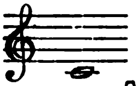
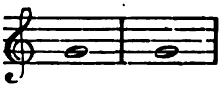
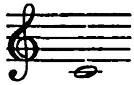
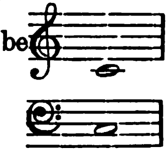
A Yoruba goes so far as to consider that his language is sufficiently musical to be easily imitated instrumentally, and accordingly to allow a player through his instrument to convey his thoughts without having recourse to words.

Such imitation is often referred to as the drum language, viz., the imitation of the human voice on the drum; and to understand it, according to them, one has to know the accents of pronunciation in the vernacular, and to be capable of recognising the different and corresponding notes of the drum.

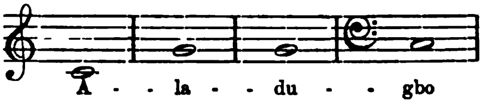
The following example explanatory of the foregoing has been given to me by an enlightened and thoughtful Yoruba, Mr. E. H. Henly:—

"To understand the drum language one has to master the accents marking the tonations: besides, a long acquaintance with the different kinds of drums is necessary. The accents are three in number, the grave (`), the acute (´), and the circumflex (^). The middle sound has no accent at all. To reduce these tonations to their proper musical sounds so as to make them sufficiently intelligible to a foreigner, I shall take as keynote *Do*, or C,  If this sound represents the middle tone, I take the word *aládúgbò*—neighbour. This consists of—

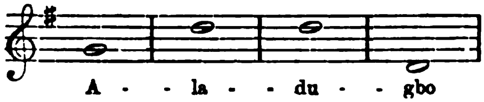
1 middle ⎫
2 acute ⎬ Accent.
1 grave ⎭

The acute is always a higher sound than the middle. Then if  be the middle, the acute would be about a fifth above *Do*, *e.g.*,  This represents the two acute accents or sounds in the above word. The grave accent is always lower than the middle. With  as middle the grave is almost an octave below it. This would be 

The whole sound now would be—



or change the scale to *sol* we have—



This represents the proper or actual tonation of the word, though in speaking the tonations appear to be very latent."

I may here tell you that the inhabitants of the Canary Islands, of Spain, and especially those of the Island of Gomera, have been credited with the possession of an articulate whistling language, by which they can communicate the most minute incidents. But my friend, Mr. W. Duppacrotch, who has resided for more than a year in Gomera, and speaks perfectly Spanish, assures me that this method of communication is very far from articulate, and serves only as a recognised code of signals referring to the pastoral life of the shepherds by whom it is employed. It is, however, interesting, since the present inhabitants seem to have derived the custom from the original Guanches, who were, it is believed, a Libyan tribe.

I gathered from a musical and enlightened Yoruba gentleman that the native character partakes often of a nature spiteful and revengeful on the occasions of trivial offence, and gives rise to many songs of an offensive turn, which have necessitated at times, in support of public peace, the interference of the Government as to grants of permission to sing or play in public.

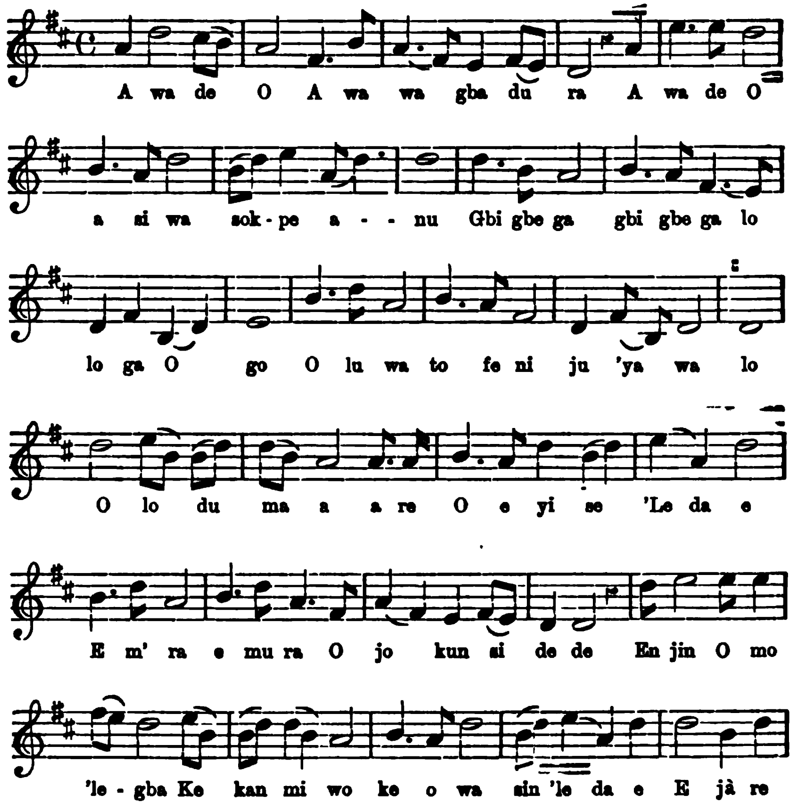
In Yoruba no attention to setting to music native airs seems to have been given, except, perhaps, in the matter of making church-going more attractive by giving hymns native airs.

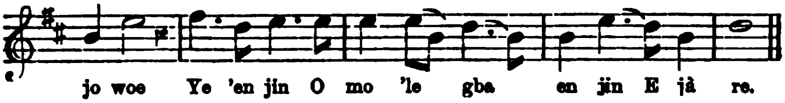
On such a practice I cannot, perhaps, do better than quote here from a note I received from a native and respected pastor of the Church Missionary Society, Rev. J. White, and give examples of such hymns:—

> "The Otas being reported to be famous native poets and musicians, and finding a difficulty to teach the new converts to Christianity English tunes, I asked them to compose their own hymns and songs, which they did, subject to my corrections with regard to things unscriptural, and the collection contained in the book is the result. They are used to this day in divine worship. There is nothing like rhyming or metre. The hymns and songs being their own composition, they are intelligibly sung by old and young, and I have no doubt that the use of it has tended to deepen their devotion."

"AWA DE AWA WA GBA DURA."

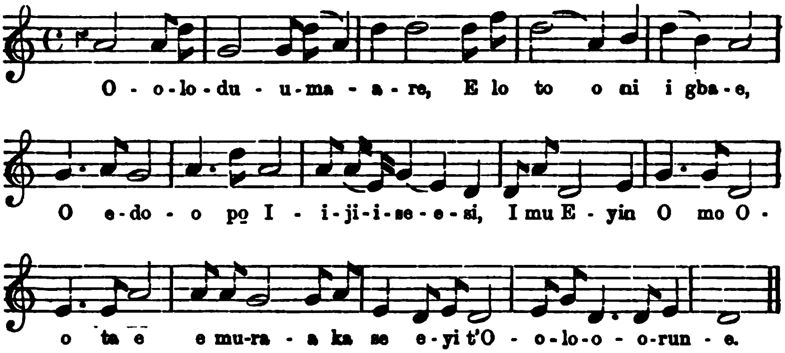
Ota hymn. Ota is a dialect of Yoruba.


A wa de O A wa wa gba du ra A wa de O
a si wa sok - pe a - - nu Gbi gbe ga gbi gbe ga lo
lo ga O go O lu wa to fe ni ju 'ya wa lo
O lo du ma a a re O e yi se 'Le da e
E m' ra e mu ra O jo kun si de de En jin O mo
'le - gba Ke kan mi wo ke o wa sin 'le da e E jà re



Awa de o, awa wa gba dura,	We are come—we are come to pray ;
Awa de o a si wa sokpe ãnu,	We are come to give thanks for mercies.
Gbigbega, gbigbega loga ogo,	The Most High is to be exalted—
Oluwa to fe ni ju 'yá wa lo,	The Lord who loves us more than our mother,
Olodumare ó, eyi se Eleda E.	The Almighty, who is the Creator.
Emura ! emura ! ojo kun si dede,	Be ready ! be ready ! the day is at hand.
Enjin ómo Elegba, ke kan mi wo,	Ye sons of Satan, what are you waiting for,
Ke o wa sin Eleda E !	That ye come not to serve the Almighty !
Ejare, jowo E	Be pleased, ah ! be pleased,
Ye ! enjin omo elegba, enjin Ejare.	Ye sons of Satan, be pleased.

OTA (*Yoruba*) HYMN.


O - o-lo-du - u-ma - a - re, E lo to o ni i gba-e,
O e-do - o po̱ I - i-ji-i-se-e-si, I mu E - yin O mo O -
o ta e e mu-ra - a ka se e-yi t'O - o-lo-o - o-run - e.

Olodumare E lo to ni gba e	The Almighty, He is able to save us,
E d'opo Ijisesi mu	Hold the post (cross) of Jesus,
Eyin om Ota	Ye children (people) of Ota
E mura a ka se eyi t'Olorune	Make ready and come to God's service.

The following are the principal drums of the Yoruba country, with their distinctive uses:—

(*a*) *Dundum, gangan, gudu-gudu and koriya*—a set of drums used by beggars. The *bata* of three different sizes forms another set.

(*b*) *Bata-koto* and *shekere* (rattle), (employed in sets of four or six) represent the instruments used socially by young men.

(*c*) *Gbedu* (used in a set of four sizes), and *koso* (singly used), are exclusively royal drums, and are played only in the king's service.

(*d*) *Bembe* (used singly) is the distinctive drum of a war chief or Balogun.

(*e*) *Agre* (used in a set of four sizes) is the hunter's drum.

(*f*) *Agba-ogboni* and *Ilu-oro* (used in sets of four) are respectively the Ogbonis' or Oshogbos' (native Freemasons), and Oro (native police) drums.

Within the compass of such a paper as I am at liberty to present here, I am unable to give detailed descriptions of the shapes and manufacture of such instruments. Such depend on the fancy of the carver and on the usages to which they are put. They are generally constructed of sizes varied to insure different measures of sound.

The *dundum* and *gangan* are carried under the left arm, and beaten each with one drumstick, the notes being regulated by the necessary pressure against the cords with which each is surrounded and braced, the fingers also helping. On these drums it is believed by natives that words can be expressed and names called.

The *gudu-gudu* resembles a kettledrum, and serves, as does the *koriya*, as an accompaniment to the *dundum* and *gangan.*

The *bata* is very different in construction from the foregoing, and resembles a truncated cone. In use it is suspended from the neck. While the hand plays on the broad base, a leather stump is applied to the smaller end.

The *bata-koto* is made of two gourds or calabashes, with necks joined or braced. The base of one is cut off and replaced by sheepskin. It is beaten by the hand.

The *shekere,* or *agbe,* is a rattle composed of a gourd covered by a network of cowries. Its jingle serves as an accompaniment to a song.

The *gbedu*—the royal drum—is the largest of native drums, standing some 5ft. high, with a diameter of 2ft. to 3ft. It is covered with deerskin. There is associated with the *gbedu* a saying, "Aiku ekiri akole fi awore se gbedu" ["The ekiri (deer) being yet alive, the skin cannot be tanned and used as a drumhead."] The *gbedu* is accompanied by smaller drums, called *opere.* The *koso,* also a royal drum, is similar in shape to the *gangan,* but has only one end covered with skin, the other being left open.

The *bembe* is a large drum used by the war chiefs when on active service. It is played hung from the neck of the drummer, by the hand at one end and by a drumstick at the other. It has been compared in shape to our brass drum. It is accompanied by a smaller drum, *omele,* and a gong or native iron bell, *agogo.* The *kere-kere* drum resembles the *bembe,* but is beaten differently, and used on other occasions.

The *agere,* or hunter's drum, is used in sets of four, each of which is played with two sticks. It is said that the elephant is worshipped as his chief god by the hunter, who dares not to eat its flesh, believing if he did so, it would end in his death.

The *agba-ogboni* is also and generally used in sets of four, in some cases of eight or nine. The heads are made of calf or sheep skins. These drums are beaten when the *Ogbonis* have their meetings, or at the death of an *oluwo* (judge), or of an *apena* (magistrate). The largest drum of the set is called *iya-ilu*, the next *ogidan*, and the two smaller ones *opere*.

The titled *Ogbonis*—such as *Lisa*, *Oluwo*, *Odofin*, *Bàse*, *Bàla*, *Apona*, &c.—are collectively called the *Oshogbos*; those without titles, *Ogbonis*.

The *Oro* drums resemble those of the *Ogbonis*. The largest is called *obetè*, the remaining three *asipele*. These drums are used with the *Oro* stick to proclaim meetings of the Oro society (composed chiefly of Ogbonis or Oshogbos) convened for the trial of public offenders, for the consideration of state questions, &c.

Here a description of *Oro* may not be out of place. It represents the active embodiment of the civil power, its mysterious head or idol. It has been interpreted as the executive of the state deified. The *Oro* stick—by which proclamation also takes place—is comprised of a stick resembling the handle of a whip, from the thin end of which is suspended, by means of a piece of string, composed of some native fibre, a flat thin tongue-shaped piece of wood, about five inches long and two inches broad.

The Egbas (Yorubas) resort pre-eminently to this practice, and when "*Oro is out*," all women, under pain of death, are obliged to remain shut up in their homes. The greatest reverence is extended to this instrument. I have seen even persons professing to be Christians awe-struck in its presence. By means of the handle of the *Oro* stick the tongue is given a rapid circular motion in the air, and then causes a weird noise, not unlike that we hear on stormy nights when the wind is playing down the chimneys. When such a noise is heard *Oro* is said to be out.

The law of the Egbas in connection with the close confinement, on such occasions, of women in their houses is unalterable. Any woman, whatever her means or position, who should be taken in the streets, when "*Oro is out*," would forfeit her life.

To satisfy the time I am allowed on such an occasion as is this, it will suffice here to say that the present site of the kingdom of Sokoto—I speak generally, situate on the central Niger to its left, and north-east of Yoruba—may be viewed as the former Houssa area. The wave of Islamism from the north and east of Africa, to the valley of the Niger, has transformed it from a pagan to a Mohammedan state, and has also affected for the better its national music, as will be recognised by the developments its instruments have since taken. *En passant*, I would say that by those who have any experience of the country, and are unprejudiced, it will be readily acknowledged that Mohammedanism has done, and is doing, much in many other ways to enlighten and raise the African.

The intonation of the Mohammedan call to prayer of the Muezzin (for which Mohammed's blind servant has the credit—whence he got it is another question), as given in music (which was here played, No. 20) from Lane's "Manners and Customs of the Egyptians," is now commonly heard in most of the important centres of West Africa, another proof of the flow of Islamism.

It may be little known that our defensive forces in the Gold Coast and Lagos colonies are fine soldier-like Houssas, very musical, of quick ear and marked intelligence. In their bands the Houssas have been trained for years to the use of our ordinary reed and brass instruments, as well as bugle, fife and drum, on which they have learnt to play, without knowing a note of music, our marching tunes and dances. The training of representatives of the race at Kneller Hall now represents an interesting feature in their current culture, which must later tell on the musical talent of the country.

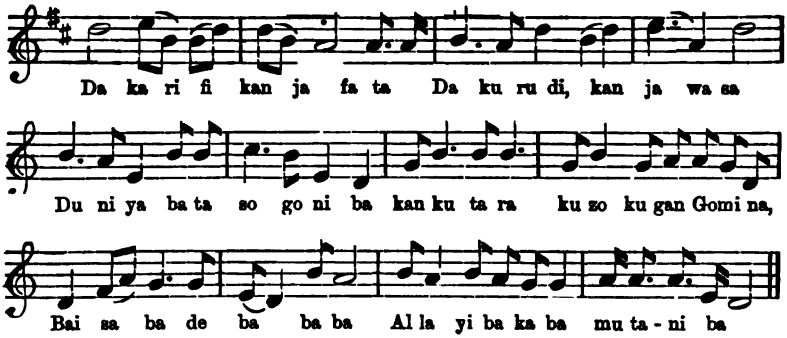
Not only do we find of the Houssas strolling singers as in Yoruba, but also itinerant musicians, who play on drums and wind instruments.

Among the musical instruments of the Houssas, I may mention the ordinary drums (*dúndūfa* and *bembe*), the war drums (*gánga* and *gangámi*), their harp-like *garaiya* and *gobso*, their guitars (*gurumin-kiddi* and *molo*), their flutes (*elgaita* and *sarewa*), their one-stringed fiddle (*goje*), and their clarionet-like bamboo (*sheshe* or *busa*).

[Houssa melodies Nos. 18 and 19 were here played.]

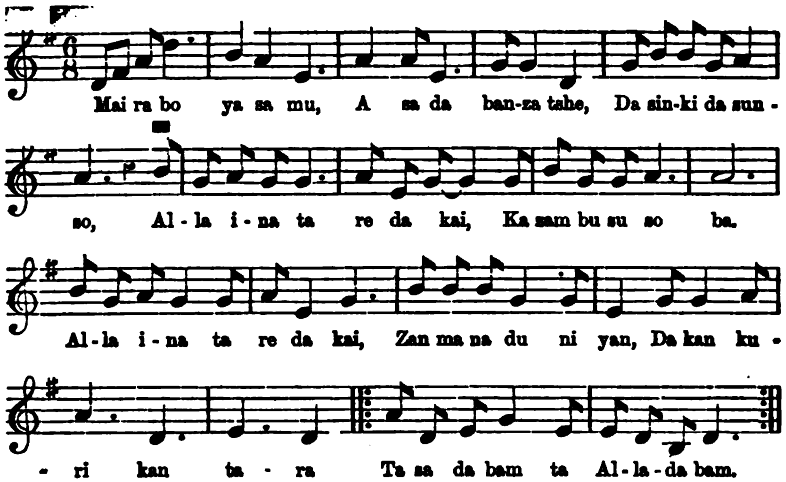
18.—"DĀ KÁRĬFI KAN JA FATA."

Houssa Song.


Da ka ri fi kan ja fa ta Da ku ru di, kan ja wa sa
Du ni ya ba ta so go ni ba kan ku ta ra ku so ku gan Gomi na,
Bai sa ba de ba ba ba Al la yi ba ka ba mu ta - ni ba

Dā kárĭfi ja fáta	The strong man incites a fight.
Dā kurudi kan ja wasa	The rich man invites a play.
Dúnia ba ta so go ni-bā	The world never likes one who is doing good.
Kánku tara ku so ku gan Gomina (Sárĭki)	Gather yourselves, come and see the Governor,
Bai saba de ba ba-bà	There is no saying he is not.
Alla yi baka ba mu-ta-ni bā.	It is God who gives and not man.

19.—HOUSSA SONG.


Mai ra bo ya sa mu, A sa da ban-za tahe, Da sin-ki da sun-
so, Al-la i-na ta re da kai, Ka sam bu su so ba.
Al-la i-na ta re da kai, Zan ma na du ni yan, Da kan ku-
-ri kan ta-ra Ta sa da bam ta Al-la-da bam.

Mai ra bo, ya sa mu,	What is given me, belongs to me.
Asa da, banza tahe;	He that is against it is foolish.
Da sinki da sunso	Whether he likes or not,
Alla ina ta re da kai,	God has given me already.
Kazam bu su soba	Whether he likes it or not,
Alla ina ta re da kai.	God has given me already.
Zan-ma na duniyan	He that lives in the world,
Da kankuri, kantara:	With patience, will command all things.
Ta sa da bam, ta Alla da bam.	Foolish man is different, God is different.

Sir John Hawkins has conveyed the idea that the best music of barbarians is said to be hideous and astonishing sounds, and has consequently asked of what importance, then, can it be to inquire into a practice that has not its foundation in science or system. The question naturally arises, has science or system always existed, or have they not been the outcome of the progress of time, of civilisation, and culture? Nations have been surely progressive in their development, and have not stood, and do not stand, on the same scale of civilisation. Have we not reached our degree towards perfection by cultivation?

Again, surely the knowledge of the musical, as of other, attainments of peoples is a matter of comparative interest and anthropological value.

According to Carl Engel, in his book entitled "The Music of the Most Ancient Nations," a clear idea of the gradual development of the art of music from its most primitive condition to that degree of perfection in which it at present exists among ourselves, may be best obtained by examining the music of contemporary nations at different stages of civilisation.

Although to many of us the music of natives may appear comparatively grating and barbaric, continuous and monotonous melody, devoid of variations—and we may say, as in

"Othello, "The general so likes your musick that he desires you, of all love, to make no more noise with it"—yet it has to them spirit and charm, and on them the same effect as regards pleasure and pain as ours has upon us.

"Susceptibility for music is in a greater or less degree national to all men, and is not dependent on the state of civilisation which has been attained."

It must be remembered that airs derived from relatively uncultivated races can seldom be accurately repeated on a keyed instrument, and since they owe their individuality and effect to peculiar intervals, such as diminished or increased flats or sharps, which no instrument, except the violin or violoncello, is capable of producing, there can be no doubt that airs which, to our ears, sound monotonous, or even discordant, produce a very different effect when sung to a native audience, much as in the animal world one cry is warning and another encouraging, to creatures of the same species, although by those of a different race they are unheeded or unintelligible. This will somewhat help to explain why a violin and not a piano has been used this evening to give you the melodies, although they have been written for the latter instrument.

I was glad to learn from the Portuguese consul at Newcastle that the Lisbon Geographical Society has been for some time collecting popular African melodies, many of which—for instance, in the Cape Verde Islands—appear to him to be the products of Portuguese popular music, especially the songs called *Fados*. This must be inevitably the result of exile or of the alien and aboriginal blend along Western Africa.

Signor Prado has within the last few days informed me from Paris that he has been collecting popular airs of Brazil, which he finds much influenced by the Negro element. I am to be favoured later with the result of his comparative study, which might with interest and advantage embrace the *corn* and other songs of the Negroes in the United States of America.

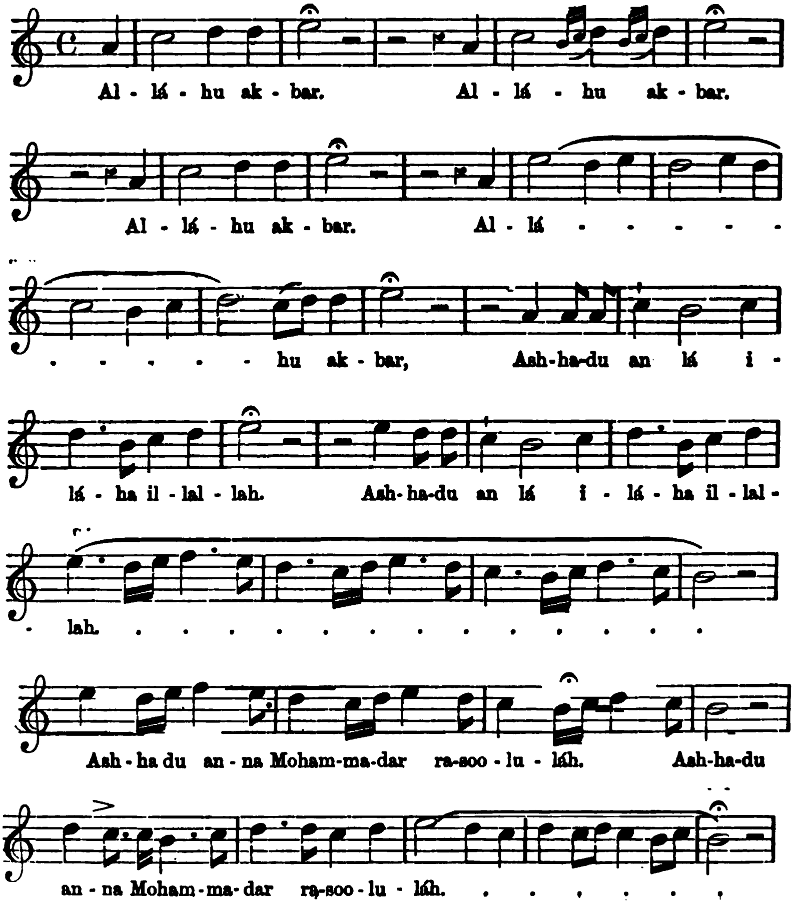
Monteiro and Messrs. Capello and Ivens came across genuine native melodies, and recognised the general musical inclination of the peoples among whom they travelled. Frequent references will be found in their writings to the plaintive *marimba* (Zanze of Senegambia), the shrill *pipes*, and roaring *bumbos*.

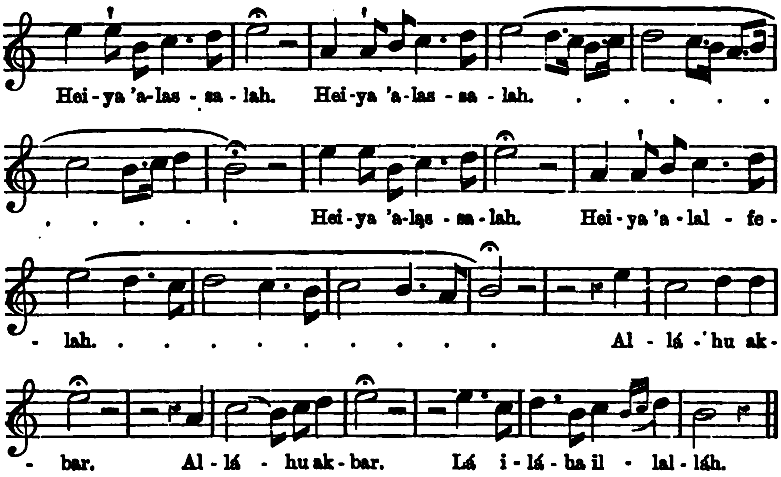
The specimens of Volof, Mandingo, Dahomey, Yoruba and Houssa melodies, to which you have listened, have been described as capable, in the hands of a musician, of accompaniments. Examples in the case of a Dahomeyan warrior's song, of "*Kere-kere*," and of the song named "*Tani kpe á oni babba*," with which I am proud to be identified, have been so attempted, but for the piano.

Some of these airs seem capable of ready adaptation to bugle or band marches, and in such direction I would invite the consideration and co-operation of some generous artiste, who by undertaking such a task would be not only gratifying individual taste, but would also be extending a nice compliment to the nations whose melodies have interested so many on this occasion.

In conclusion, it is my pleasing duty to acknowledge, in connection with these airs, as also for much of the information which has helped me to compile this paper, my indebtedness to a German artiste and missionary labourer in West Africa, the Rev. J. Haas, and to two native gentlemen of considerable musical promise, Mr. A. C. Willoughby and Mr. O. E. Macaulay, of Lagos, whose English education has enabled them to commit to music the Yoruba, Dahomey, and Houssa melodies.

20.—MOHAMMEDAN "CALL TO PRAYER" OF THE MUEZZIN.


Al - lá - hu ak - bar. Al - lá - hu ak - bar.
Al - lá - hu ak - bar. Al - lá - - - - -
- - - - - - hu ak - bar, Ash-ha-du an lá i -
lá - ha il - lal - lah. Ash-ha-du an lá i - lá - ha il - lal -
- lah. . . . .
Ash - ha du an - na Moham-ma-dar ra-soo - lu - láh. Ash-ha-du
an - na Moham-ma-dar ra-soo - lu - láh. . . . .


Hei-ya 'a-las-sa-lah. Hei-ya 'a-las-sa-lah.
Hei-ya 'a-las-sa-lah. Hei-ya 'a-lal-fe-
lah.
Al-lá-'hu ak-
bar. Al-lá-hu ak-bar. Lá i-lá-ha il-lal-láh.

Ehler's Ascent of Kilima-njaro. — Further details have been published in Peterman's "Mitteilungen" in the form of a preliminary report (with map) on his journey, by the traveller himself. On the 12th November, Herr Otto F. Ehlers, in company with Dr. Abbott, an American naturalist who had been collecting for upwards of a year in the country round Taveta, left Marangu with a party of 30 men. The first camp was pitched at the foot of a small crater almost due south of the eastern peak, Kimawenzi, at an altitude of about 9,800 feet. On the following day Herr Ehlers made an excursion to Kimawenzi and reached a height of about 16,400 feet. Any further ascent of this remarkably jagged mountain seemed to him impossible. The two following days were spent in collecting plants and searching for a suitable camping place where the majority of the native followers might remain, while the travellers proceeded up the mountain. A spot was chosen to the west of their last camping ground, at an altitude of about 10,500 feet. From here the two travellers started with five men and provisions for four days, taking a northerly direction up the saddle, between Kibo and Kimawenzi. After some hours' marching they discovered that they had made the same mistake as Dr. Meyer had done in 1887, and were proceeding in a direct line to the summit of the lower eastern peak. Being at this moment overtaken by a snowstorm, they pitched their camp at an altitude of about 15,500 feet. On the following morning, which broke bright and clear, they set out in a westerly direction over the newly-fallen snow, proceeding along the northern edge of the line of lava hills mentioned by Dr. Meyer, whose route lay along their southern side. After much toilsome marching, snow having commenced to fall again, the natives were compelled to return, leaving the two travellers to push on to their last camping ground (17th November). The morning of the 18th was exceptionally clear, and an early start was made over the hard-frozen snow. At seven o'clock they found themselves at an altitude of 16,200 feet, about the middle of the eastern side of the summit. Instead of attempting to ascend from this side as Dr. Meyer had done, they proceeded in a north-westerly direction over lava streams and rocky boulders to the northern side of Kibo. Unfortunately, at this point Dr. Abbott completely broke down, and Herr Ehlers pushed on alone. Keeping to the east of a mighty lava stream, he pushed his way over sand, ashes, and rubble, covered with the freshly-fallen snow, and, after repeated halts, but without suffering at all from the rarity of the atmosphere, he arrived at ten o'clock at the ice wall, which completely encircles the actual summit, and the scaling of which at this point was impossible. He consequently proceeded along this wall of ice for some distance in the hope of finding a point at which it could be surmounted, but after a time was compelled to retrace his steps, owing to a steep fall in the ground. Descending the summit a little, he contrived by much toilsome climbing to get round to the north-east side of the summit, and here, from a point of some little elevation, he obtained a comparatively wide view over the summit.—*From the Proceedings of the Royal Geographical Society, April, 1889.*

THE GEOGRAPHICAL DISTRIBUTION OF PLANTS.

By Mr. LEO GRINDON.

[Addressed to the Members, in the Botanical Gardens, Old Trafford, Aug. 26, 1889. Illustrated by the plants in the Gardens.]

EXCEPTING in the Arctic regions, that which we term the scenery of the world owes its most distinct and pleasing features to vegetation. The sea, waterfalls, huge rocks, even deserts and wastes, may be imposing, but they never awaken ideas of living and joyous beauty; nor, from their similarity, can they supply pictorial characteristics, or confer features upon the landscape, such as comes of the abundant presence of trees, of the verdure of meadow and pasture land, and of displays, in their season, of flowers and fruit. Much of the pleasure we derive from the contemplation of vegetable matter arises, without question, upon the chaste and harmonious blending of its multifarious elements. So deeply is the mind affected by the sweet fact of Nature's original and spontaneous intermixtures, that all the best efforts of decorative horticulture are devoted to imitating them as far as may be practicable. A botanic garden, legitimately so called, is a synthesis of the vegetation of every country and climate. It strives to associate examples of all known types of vegetable structure, and so to assemble them that they shall present a spectacle permanently delightful. Such a garden thus becomes a kind of keynote to the lofty and fascinating department of science which bears the name of Botanical Geography—our theme this afternoon; and well pleased may we be that our present contemplation of it can be pursued amid conditions so favourable. If deficient in certain classes of hardy herbaceous plants, shrubs, alpines, and aquatics, the conservatories, at all events, are crowded.

In all considerations, whether moral or philosophical, it is wise to begin at home. Let us start, then, with our own country, Old England. Careful inspection of the indigenous flora of even so limited an area, soon shows that plants, when growing wild, prefer particular habitats. Introduced into gardens, they show themselves singularly civil and obliging, cheerfully acknowledging the sovereignty of man. Many, no doubt, at first are shy; but there are no plants, perhaps, which refuse to accommodate themselves, sooner or later, if kindly treated, to circumstances very different to those of their birthplace. It remains true, nevertheless, that all plants have original preferences—ascertaining which, we know exactly where to look for them. How varied, in our own immediate neighbourhood, the vegetation of the peat bog, the moorland, the marsh, the copse, the wayside! A short railway journey will introduce us again to yet other floral spectacles—those found upon the shore and upon mountain summits. Crossing one of the Cheshire or Lancashire mosses, St. Chad's for example, we identify it at midsummer by its innumerable "silver tassels," white as snow, which for a while relieve the dismalness. The Birkdale sandhills are marked by their mat-grass, blue eryngo, and sundry curious spurges. In the woods we find the anemone, the azure harebells, and the crimson lichens. Extending our survey, but still not quitting England, different geological formations are found to be equally well distinguished. The botanist who delights in the golden cistus must wait till he treads upon limestone. Slate, clay, lias, chalk, all have their aboriginal inhabitants. Plenty of hard fern is a tolerably sure sign of millstone grit. Everything true of the land is, in this respect, true also of water. Look at the virgin lilies upon the mere; the "green mantle of the standing pool;" the snow-cups of the running stream, when clean and clear, like the Wye at Millersdale and the Avon at Stratford, Sabrina's own tresses floating beneath. So, too, when the water is salt, where rock-bound Old England has a fringe of black fuci. Other localities yield the

> "Crimson weeds that spreading flow
> Or lie like pictures on the sands below,
> With all those smooth round pebbles that the sun
> Through the small waves so softly shines upon."

A pleasing attribute of many plants is their *sociability*. They love their kin, and to live side by side. How vast the territories occupied by the common bracken! The sight of one russet frond means the sight of ten thousand. Similar fraternising is characteristic of the golden furze, in its two varieties, and of the lilac heather in September. Were every plant known to botanists to insist upon living in companies equally large, and to have a domain of corresponding extent, there would be room in the world for only 8,000 species instead of 100,000. Many of the aquatics follow suit, as illustrated very conspicuously in the Potomogetons and the Stratiotes. *Per contra*, there are many plants which prefer comparative isolation. Agrimony, though widely distributed as a species, is almost always found living alone. That curious sylvan orchid *Epipactis latifolia* behaves in precisely the same way—plenty within half a mile, but careless of companionship. This remarkable isolation cannot come, in the case of the orchid, from want of power to produce seed, for the seed is beyond counting. How this fact shall be explained is one of the problems waiting solution· Upon these curious habits in regard to sociability rests a good deal of the difference between the "Vegetation" of a district and its "Flora." When there is immense monopoly, as in the case of the heather, the whortleberry, and many other plants—certain kinds also of trees, as pines and firs—though the "Vegetation" may be copious, the "Flora," or number of constituent species, must needs be very limited. Isolation, on the other hand, gives opportunity for a vastly greater number of distinct forms within an area no larger. There is room, then, for a very rich "Flora." A "Flora" may also be rendered very rich by the occurrence of "rare" plants, for many species occur in extremely few localities—the *Arabis stricta*, for example, of St. Vincent's Rocks, which is found scarcely anywhere else. Why the Arabis should be peculiar almost to Clifton is another of the problems standing over.

So much for Old England, upon the botanical geography of which I have dwelt so long, because Old England is a miniature of the whole world. Every principle in Nature, almost every type found in foreign countries, is illustrated in our own island. We are short of glaciers and active volcanoes—and we have nothing, perhaps, that can be called representative of the elephant and the kangaroo—but miniature images of all besides it would not be difficult to discover. Man is the epitome of all organic existence: Old England is the epitome of the planet it ornaments so thoroughly well. So that in reference to Botanical Geography, the facts and phenomena observable in foreign countries differ in no degree, as to kind, from those which fall under our everyday home observation. They are played forth, often, upon a far more magnificent scale, and excite corresponding astonishment and admiration, but in the entire category there are probably no unaccustomed descriptions of fact. Abroad, instead of character being given by special plant-forms to little plots like Chat Moss or the Birkdale sandhills, entire regions become distinguished. Instead of localities, we have plant-nations, so to speak. At the Cape of Good Hope grow Proteas and 95 per cent of all the known Ericas. The Cactuses, in their numberless forms, belong to the warmer part of Central and Southern America. Eucalyptuses and 95 per cent of all the known species of Acacia belong to Australia. Siberia is noted for its gigantic Umbelliferæ. The United States have their countless Solidagos. The Cinchona trees belong to special elevations upon the Peruvian Andes; and so on indefinitely. There are corresponding examples, upon a great scale, of sociability, as illustrated in the pine forests of Northern Europe and North America. Isolation is similarly illustrated in the silver tree of the Table Mountain. The ocean, after the same manner, has its parallel story to tell, that wonderful seaweed the Sargassum being confined to the portion of the Atlantic which lies between 22° and 36° north latitude and 25° to 45° west longitude. Just, again, as in England we have the universal daisy, there are cosmopolitans in regard to continents, as illustrated in the *Stramonium* and the *Solarum ingrum*, which are scattered over the whole of the warmer portions of the globe.

Arrived at this point we find ourselves embedded in a score of the most stupendous of scientific questions, Why are the same species of plants not present when the conditions of soil and climate are similar? Why do certain species of plants predominate in particular districts? Is the possession of that particular district ancestral, or has it been acquired in course of time? Why, *per contra*, are others so rare? Before any one of our score of queries can be answered, we have to gather together all that Geology has to disclose. The story has yet to be related that tells of the *Cycadaceæ*, fossil and recent, and of the rise and progress of the ferns. Next comes the grand doctrine of Centres—the hypothesis, rather, which teaches that the 100,000 species of plants now existing were associated in the "beginning" in definite spots, whence they spread away, in course of time, just as the circles move upon the surface of still water. Abreast of all of these are the doctrines of Evolution, and the Survival of the Fittest, with the hand-in-hand question of the Origin and the Unity of Mankind. There is evidently plenty to do. The disposition with too many, it is to be feared, is to lay down laws from an insufficient basis of ascertained fact. Other theorists shut their eyes to the exceptions, or decline to inquire if exceptions exist, such as would be fatal or calamitous to their own views. For my part, I am not yet young enough to presume to pronounce a definite opinion in regard to any one of these problems. Were I twenty-one, I should probably feel quite sure—for the present, accordingly, I must beg leave to be excused.

Many extremely attractive and curious facts pertain to the prolonged consideration of this charming subject—the Geographical Distribution of Plants. The plants of a given country are often represented, for instance, in some measure, by certain other plants, not decidedly related, but bearing a near general likeness. In Australia, the Ericas of the Cape are represented by Epacrids. In South Africa, the Stapelias and some of the Euphorbias remind us of the American Cactuses. There are also remarkable "echoes," if I may so term them. Certain New Zealand Veronicas and Conifers resemble northern hemisphere Lycopods; the Casuarinas seem another utterance of the Equiseta; the Villarsia recalls the Nymphæas; passion-flowers, in many particulars, reiterate Cucurbits. Alluring, again, when all is known, will be the tale of the migrations of plants, including those which take place by sea. Many seem to follow in the wake of civilised man. Civilisation, in truth, is in a measure actually abolishing the primitive geographical distribution of at all events weeds and economic plants. European agricultural weeds go, as colonists, to America and to Australia, and settle there. American weeds return the compliment by establishing themselves in Europe. Large and handsome plants do the same. The Opuntia is now as common in Southern Europe as the apple-tree is in some parts of temperate South America and maize in Africa, and as many conifers from distant regions are becoming in England. A well-known example occurs at Bournemouth. The characteristic plants of countries, like their primeval human inhabitants, will in many instances become legendary. Much has yet to be learned, moreover, and compared, in regard to altitude and latitude—the conformity of Alpine floras in particular—and the degree of cold that particular plants can endure. In reference to the last point it may be remarked that there is no such thing as "acclimatising." The utmost that can be accomplished in this way is to find out what degree of heat or cold a plant can endure without being killed. The cultivation of the Cinchona tree, now in progress in India, shows how substantial is the value of these various inquiries. Botanical Geography, in a word, is a science fraught with practical usefulness, not less to the welfare of nations than to the student of the laws of Nature.

PROCEEDINGS OF THE SOCIETY

FROM JULY 1ST TO SEPTEMBER 30TH, 1889.

HUNDRED AND SECOND MEETING

Of the Society, held in the Co-operative Hall, Longridge, Monday, July 8th, 1889, at 5 o'clock p.m. Alderman R. BATES in the chair, and about sixty members present.

The members met at Victoria Station, and went by train to Accrington. There they found carriages which took them to Whalley, where the Old Church and the Abbey grounds were very carefully examined, and the party listened with very great pleasure to the explanations of some of the members who, being acquainted with the district, acted as guides. Mytton Church, the burial-place of the Sherbournes, was examined with much interest. Passing through Hurst Green, the members arrived at Stonyhurst, where they were received at the College by the Rev. Professors Gerrard, Perry, Sircum, Pennington, &c., who very kindly allowed them to examine this great seminary—the classrooms, the dormitories, the library with its great treasures of literature and art, the chapel, assembly-rooms, play rooms and grounds, the beautiful gardens and yew-tree walks, the observatory, and the leads of the College, from whence a splendid view of the surrounding country was obtained. The observatory was peculiarly interesting. The method of taking the sun-spots every day was shown, and the scientific apparatus fully explained. After visiting the College the members assembled at the Fenton Arms and partook of a capital dinner, and then the carriages took them to Longridge, where they had tea at the Co-operative Hall, and some remained to climb Tootal Heights, from which a magnificent panorama of the Lancashire coast was seen.

The journey was a delightful surprise to a good many members, who had no idea of the beauty of the valleys and uplands of that part of Lancashire and Yorkshire.

Very hearty votes of thanks were given to the authorities of the College, our host of the Fenton Arms, and the committee of the Longridge Co-operative Society, for their kindness to the members, and to the chairman for his kind presidency.

HUNDRED AND THIRD MEETING

Of the Society, held at the Eastham Ferry Hotel, on Saturday, July 27th, 1889, at 5 o'clock p.m., Mrs. **Bosdin** T. **Leech**, one of the members of the Council, in the chair.

The members proceeded to Liverpool, and were received on board the Fairy Queen, where lunch was served, and they were landed at Ellesmere Port.

Mr. Councillor **Leech** then guided the members, pointing out the progress of the Ship Canal works, and showing them the working of the excavators, the method of rock-blasting, the position, &c., of the dock gates at Eastham, the cottages of the workpeople, and noting the work which had been done on this section since the last visit of the members.

The journey was made less laborious on this occasion in consequence of Mr. Walker very kindly placing some wagons and an engine at the service of the members.

At four o'clock tea was very satisfactorily served at the Ferry Hotel.

Mr. Alderman **Bates**, J.P., moved the following resolution, which was seconded by the **Mayor** of Heywood, supported by Mr. **Booker**, and carried with much cordiality :—

"That this meeting of the Society desires to express its hearty thanks for the pleasure the members have this day enjoyed, and the information obtained, through the courtesy and kindness of Mr. Leader Williams, Mr. T. A. Walker, Mr. Councillor Bosdin T. Leech, and Mr. Thompson."

Mr. **Barlow** moved and Mr. **Provis** seconded a vote of thanks to the Secretary for organising the visit, which was carried.

The **Secretary** replied, and asked the members to make an effort to increase the membership.

Mr. **Blake** moved and Mr. **Gregory** seconded a very hearty vote of thanks to Mrs. Leech, which was carried with acclamation.

Mrs. **Leech** responded, and the members returned to Liverpool, arriving in Manchester about nine o'clock.

HUNDRED AND FOURTH MEETING

Of the Society, held at Dean and Dawson's Hôtel, Rue Titon, Paris, on Friday, August 9th, 1889, at 9-30 a.m., Councillor **Roper** in the chair.

The members, to the number of about fifty, stayed a week or ten days in Paris, and were everywhere received with great kindness. On this day they waited on the President of the Republic, to present him with the first four volumes of the Journal, at the request of the Council.

The arrangements were made at this meeting; and thanks were given to Mr. Dean and all those who had in any way helped to make the visit as happy and profitable as it turned out to be, after which the members went to the Elysée, and were received by the President.

Two young ladies, Miss **Edmondson** and Miss **Dean**, presented the President with handsome bouquets, and Miss **Law** presented him with the Journals.

The **Secretary**, in introducing the deputation, thanked the President for the opportunity of seeing him, and said that the Manchester Society (a young one) had received great kindness and help from a large number of French Geographical

Societies; and the Society desired, through the President, very cordially to make acknowledgment of these many kindnesses. He also referred to the President's grandfather in a few graceful words.

In reply, the **President** expressed his pleasure in receiving the members present of the Manchester Geographical Society, and wished success to the Society in its work. He warmly welcomed the members to Paris, and hoped they would have great enjoyment of their visit; and, thanking them for the Journals, said they should be kept as souvenirs of the kindly feelings expressed by the Society, and of the complimentary words spoken to himself.

The President was then introduced to the members, and after a few more words retired.

The members were then invited to look over the Palace, which gave them much pleasure; and, on leaving, the secretary of the President handed to the members, at the request of M. Carnot, a framed portrait of himself, as a gift to the Society and an expression of goodwill.

The Portrait has been carefully brought to Manchester, and will adorn the walls of the Library.

The Secretary (M. le Colonel Lichenstein) then shook hands with the members, and saw them to their carriages.

The Secretary of the Society attended the International Geographical Congress, and will duly report thereon.

HUNDRED AND FIFTH MEETING

Of the Society, in the Palm House of the Botanical Gardens, Monday, August 26th, 1889.

The members were received at the Gardens, on behalf of the Council of the Society, and after an inspection of the Gardens, were addressed on "The Geographical Distribution of Plants," by Mr. **Leo. H. Grindon**, with illustrations drawn from the plants in the Gardens. (See pp. 299-302).

After tea, the Venerable Archdeacon **Anson** took the chair, and the **Secretary** gave a lively description of the visit of the members to Paris.

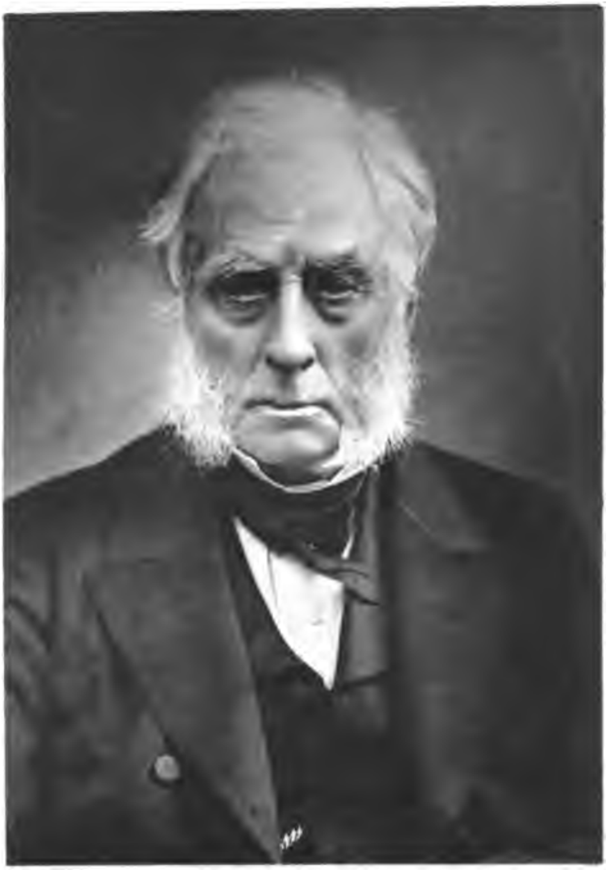
The thanks of the members to the authorities of the Gardens for their kindness in permitting the meeting, Mr. Bruce Findlay, and to Mr. Grindon for his admirable address, were moved by Councillor **Sherratt**, seconded by Mr. **Barlow**, and carried.

Mr. **Grindon** responded, and offered to go through the Greenhouses with the members.

The death of Mrs. Roby, one of the Council of the Society, having been announced, Mrs. **Leech**, in a few appropriate and touching words, proposed that a vote of sincere and warm sympathy should be forwarded to Mr. Roby on this sad event. Mr. **Irlam** seconded the motion, which was carried.

The thanks of the members to the Ven. Archdeacon Anson for presiding at the address and the meeting were heartily given, on the motion of Mr. **Barker**, seconded by Mr. **Balmer**, and supported by Messrs. **Sherratt** and **Irlam** and Mrs. **Leech**, who, in doing so, urged the members to do their best to obtain a large accession of new members.

The **Archdeacon** responded, and the meeting closed.



Devonshire

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

MANUFACTURING PROCESSES IN RELATION TO HEALTH.

BY J. T. ARLIDGE, M.D., F.R.C.P. (London), Milroy Lecturer at the College, &c.

[Delivered to the Members, and the Members of the Manchester Statistical and other Societies, in the Memorial Hall, October 2, 1889.]

IN response to a courteous invitation from your able and zealous secretary, I have undertaken to say something respecting manufacturing processes generally in their relation to health.

It will be clear to every one of my audience that I cannot attempt an exhaustive review of the subject in the course of a single lecture. Manufacturing operations are well-nigh countless, and almost all of them present some one or more features peculiar to themselves, which may exercise a distinct influence upon the health of those engaged in them. But although this particularity exists, the various modes in which occupations affect health are reducible to a comparatively small number, and admit of classification.

Before, however, I proceed to show this, I will introduce a few preliminary remarks. In the first place, I would say that the observation and recording of the consequences of manufacturing processes, and of the mode by which those consequences are brought about, have been greatly neglected in this country. This is the more remarkable, inasmuch as this kingdom stands foremost among the nations of the world in the variety and extent of its manufactures, and consequently supplies the best field possible for investigation.

Exhaustive inquiries have been made relative to most known causes of ill-health affecting the community at large, but very few respecting those associated with employment, although the latter, when looked for, are as patent as the best-known factors of disease. Another general remark I would make is, that the estimation of the effects of any occupation is not easily arrived at. A large number of instances is requisite for a statistical basis, and we must be sure that those selected represent labour of a like kind and having similar general sanitary conditions.

It is not enough to collect returns of sickness and mortality of people occupied in a given form of employment, described popularly under a general appellation, making, as, for instance, of textile workers, cotton, linen, or woollen fabrics; or, again, of potters or metal artisans; for we all know that in a worsted or cotton mill or a linen factory a variety of processes goes on, dissimilar in sanitary conditions. Hence assertions respecting the health aspects of a manufacture as a whole are not to be relied on. If this be true of textile factories, it applies still more forcibly to the other trades quoted in illustration—the occupations of potters and of Sheffield and other artisans making metal goods.

Again, when we have satisfied ourselves that a certain disease or class of disease prevails in a manufacture, we shall better comprehend its production and consequences by comparing the sanitary features of that occupation with others marked by the presence of similar disorders.

Another point to bear in mind is, that almost, if not quite, without exception, several causes co-operate in manufacturing processes to bring about the ill consequences to health observable in connection with them. Some such causes are inseparable from the occupation, and may be called *intrinsic;* whilst others are merely accidental or *extrinsic*. Therefore, to arrive at the just value of observations on the health-results of any employment we must distinguish those necessarily belonging to it from those accidentally present; or otherwise we shall hold it chargeable for disasters of which it is really innocent. Now these *extrinsic* circumstances of an employment, as affecting its healthfulness and its mortality, are very numerous, and some of them of considerable energy. I will content myself by stating the most important. The proportion of young to old, and that of male to female, distinctly affects the ratio of sickness and mortality. So likewise do the habits and modes of life of the employed, the sanitary state and surroundings of their homes, the locality of those homes and of the factories themselves, whether in crowded towns or in the open country; and, in short, the multitude of general conditions affecting health which sanitary science has made manifest.

To come now to those circumstances of manufacture which at the present time appear practically inseparable from it, we may at once recognise that there are some that attach to several occupations, whilst others have a more limited range of action. With this fact before us, we can see our way to constructing groups of occupations operating prejudicially upon health by similar agencies; and then, by noting what these agencies are, we perceive they are to be found either in the materials employed, or in the processes and instruments used in manufacture and essential to it. Of these two divisions of the subject the former is by far the more important.

I must here notice that the consideration of the health aspects of mining, both as to raising coal and the ores of metal, forms no part of my present business. Not by its deficiency in interest and importance, but because it is far too extensive for the compass of this lecture, and has few direct relations to what we understand by manufacturing processes.

There is yet another topic that rightly belongs to an inquiry relative to the health incidents of trades—I refer to accidents occurring in their pursuit. However, this again is one I feel obliged to omit.

Let me now point to the table showing a classification based on the most prominent causes of disease to be found in connection with manufacturing pursuits:—

CAUSES OF INDUSTRIAL DISEASES.

1. Dust
    - Organic
        - Animal.
        - Vegetable.
    - Inorganic
        - Non-metallic.
        - Metallic.
2. Poisonous materials
    - Non-metallic.
    - Metallic.
3. Noxious vapours
    - Animal.
    - Vegetable.
    - Mineral.
4. Excessive temperatures
    - Heat.
    - Cold.
5. Electricity.
6. Atmospheric pressure
    - Increased.
    - Decreased.
7. Conditions affecting the special senses.
8. Overuse and overstrain of parts of the body.
9. Exposure to infectious or contagious diseases or to parasites.
10. Occupations fraught with accidents.
11. Sedentary employment.

As I lately observed these causes, when examined, are found to exist either in connection with the materials employed, or with the mechanical or physical agents or appliances resorted to in the details of manufacture. By adopting this division of the subject in hand, I shall be able to convey a general idea of the health aspects of manufacture; whereas, to discuss *seriatim* the array of causes of trade diseases set forth in the table placed before you, and to indicate for each trade how they severally act, would be the business of half a dozen lectures, and not of one.

To follow the course of proceeding just now intimated, I have to consider the sanitary bearings of the materials used in manufacture. These materials occur in every physical condition—solid, liquid, vaporous and gaseous. Those of a solid nature also occur in every diversity of form—earthy and metallic, of vegetable and animal fibre, of solid wood, ivory and shell, bones and hides. In the course of manufacturing processes many solid matters undergo changes in their physical form; but these, for the most part, will be best treated of in the subsequent divisions of my subject.

I shall take in turn mineral, vegetable, and animal solids, whether non-poisonous or poisonous. But of each and all, their injurious effects are almost exclusively exerted when in the form of dust. They may be employed in a state of powder or may evolve dust in the process of manufacture.

Mineral substances are sources of dust from the primary stage of getting them from the mine or quarry. Colliers, ironstone miners, and quarrymen suffer by the inhalation of the dust generated by their work; and when poisonous ores, such as lead or copper, are worked, the danger of poisoning is added to the other evils of the occupation. But as mining operations are not now under review, I will pass on to the consideration of the metals after their extraction from the ores.

That most useful, but, alas! poisonous, metal, lead, is a cause of illness, both in its metallic shape and also when, by chemical affinities, it is converted into its salts. The handling of metallic lead is a cause of lead-poisoning to plumbers, to file-cutters, and occasionally to other labourers. Water, beer, cider, and other liquids in contact with it, take up so much of it as to acquire poisonous properties, and produce "plumbism" among those who drink them. The sad consequences of the salts of lead are especially witnessed with house-painters, enamellers, floorcloth-makers, colour-makers, and those who use glazes made of lead—usually in combination with borax: as, for example, those workmen in the pottery manufacture, who, by a proceeding called "dipping," put on the glaze or enamel of earthenware and china. Omitting minor occupations, it is enough to mention another trade where workmen are subject to lead-poison. I refer to flint-glass making and polishing.

It might alarm my lady audience to unfold the secret of the composition of some articles of the toilet—to hint that some cosmetics and hair-dyes are not free from lead in solution, and that even textile fabrics now and then contain lead salts in the colours they are dyed with, and that a reprehensible use of white lead in powder has been discovered in lace imported from the Continent.

Metallic iron is in itself innocuous, but in the shape of dust generated by the process of grinding, as seen in the manufacture of cutlery, it becomes the source of serious disease by its highly irritating mechanical action on the lungs. This, its injurious action, is unfortunately too frequently exhibited among the Sheffield cutlery grinders, by the production of a form of consumption.

Copper produces less disorder among those who work with it than might be imagined. Still it shows a baneful action among coppersmiths and copperfounders in the form of colic, of chest-irritation and shortness of breath, besides staining the hair and the gums green. When it is combined with zinc to form brass, its evil energies are likewise manifested by the production of chest-troubles, and of peculiar nervous symptoms. In years gone by, when artisans were more careless than at present, and work conducted regardless of sanitary laws, a disease prevailed among brassfounders known as "brassworker's ague." Happily this curious disorder is now-a-days rarely witnessed.

Zinc is a metal which may be said to be generally innocuous. Still, there is a contention among medical observers as to how far the zinc, when thrown off in snowy clouds of oxide on being mixed with the copper in brassfounding, is concerned in developing the symptoms just now referred to in connection with that proceeding.

Arsenic is a metal which, in all its combinations, is highly poisonous. Unfortunately the brilliant hues of its salts recommend them as colouring agents. Hence it is that they are resorted to by the manufacturers of wall and other coloured papers, and by makers of artificial flowers and fruits. Arsenic is likewise a frequent component in glassmaking, but here its injurious effects are almost, if not wholly, obviated by the fact that it vaporises with strong heat; and considered chemically, the question therefore arises if the arsenic can serve any real purpose. But, unhappily, no doubt exists as to its pernicious consequences when used in paper-colouring and in artificial flower-making, nor—must I forget—in the making and using of flypapers.

Mercury is a metal that, by its physical condition, stands midway between solids and fluids. Even without heat, mercury gives off vapour, which is not without possible evil consequences to those exposed to it. But in most of its applications the metal is also handled, as in silvering mirrors. Happily the old process of silvering by the medium of quicksilver is being displaced by a simple new one, whereby a thin coating of silver is deposited directly upon the mirror by chemical agency. The several salts of mercury also have their use in the arts by reason of their colour, as, for instance, vermilion, which, like all its other compounds, is replete with poisonous qualities.

Quitting this brief notice of true metals employed in the arts, I pass on to those compounds of the earthy metals—clay, flint, sand, and lime. You will forgive me for the elementary information that clay is the material required for the making of pottery. Yet, this statement is quite correct when we are called upon to make common red ware—flower-pots, crocks, and the like; but it is not equally true when we have to produce earthenware and china for table use and ornaments. Because, in this case, the potters have to go to Dorsetshire and Devonshire for their material; and this, when we come to analyse it, is found not to be clay, as commonly understood, but chiefly to consist of decomposed granite, and therefore to be rather a silicious or flinty substance than an aluminous one. So much the worse for the potters who have to use it; for silicious dust appears to be more injurious to lungs when inhaled than wellnigh any other dust in use. The evidence of this fact is furnished by the prevalence of asthma and potters' consumption. A very dusty business is cement making, but the dust arising from the calcined mixture of clay and lime is less pernicious than might be imagined. Nevertheless, it has its effects in producing shortness of breath and bronchitis among the workpeople who pursue the occupation for a long time.

This brief notice must suffice for mineral matters. I now press on to the other solid materials used in manufacture. The most important of these are such as possess a fibrous character, and are convertible by textile operations into tissues of a vast variety of forms and consistence. In this essentially textile city, and before an audience so well versed in the art of spinning and weaving, it would be presumption on my part to enlarge upon the characteristics of textile manufacture. Suffice it to say, that the fibrous solid materials are, from a broad general survey, subjected to manufacturing operations of a similar character, and that what unhealthy consequences soever follow from those operations are due to the dust generated thereby. Further, that the evils of dust attend almost exclusively the earlier processes performed with the purpose of developing the fibrous texture of the material, and cleansing it from extraneous substances. However, silk, wool, and cotton, and linen, do not stand on the same footing with regard to their sanitary features. Few ills attend the manufacture of silk, and those few are almost confined to the waste-silk business. The so-called silk waste is mixed with a considerable amount of extraneous matters, which have to be got rid of by washing, and by the repeated action of combing machines. The working of these machines causes the throwing off of considerable quantities of dust, but, as the machines are for the most part enclosed, little dust escapes into the workroom, excepting when, from time to time, it is requisite to open them. The other animal fibrous material is wool; and happily its manufacture—the making of worsted, and of woollen cloth—is chargeable with only small inconveniences. Wool fibre is strong and not brittle, and possesses a softness that allows its spinning to proceed with little friction and little dust. Moreover, as is well known, in the making of woollen yarn, it is necessary to keep the threads moist. The only serious drawback in the woollen trade occurs when foreign fleeces, of a foul quality, and laden with contagion, have to be handled by sorters and others, and prove the source of that most serious and usually fatal malady known as the woolsorter's disease. Both the character and cause of this disease are now so well ascertained, that the mode of preventing it remains the only problem, and one certainly within the compass of sanitary science to solve.

I now come to cotton, about which all here will know more than myself. You will admit that, except in the stages preparatory to spinning, there is scarcely any dust given off; and that, even in those, the precautions taken to prevent diffusion succeed in reducing its production to a minimum. At the same time, when we turn from viewing the beautiful machinery for making the yarn to the weaving process we encounter less favourable sanitary conditions; for it is in this department we find the very objectionable processes of sizing and of steaming—processes assuredly detrimental to the comfort and health of the weavers, and tending to cut short their term of life. Only recently, Parliamentary measures have been introduced for the purpose of limiting those injurious operations, and I hope that experience will speedily justify their introduction. The heat and moisture of the shops, the deprival of fresh air from outside, the exhalations from the size and its contained ingredients, combined with the clay dust, engender conditions most detrimental to health. Moreover, let me add, as a fact of wide application, that all forms of labour of an unwholesome and dangerous character not only sacrifice the health but also the *morale* of those engaged in them.

The last textile manufacture I shall mention is that of linen. In this business the material itself (the fibre from the flax plant) exceeds all other substances used in textile processes in its powers of evil. There is a hardness and brittleness in flax fibre not seen in silk, woollen, or cotton. Hence the dust from it proves more irritating to the throat and lungs than either of the other materials in question. Its powers of bodily injury obtain in its earliest stage, when it has to undergo in flax mills a process of beating, to separate the fibres from the associated woody substance; and they continue in full energy in the subsequent operation of heckling, whereby the fibres are cleansed and drawn out preparatory to being dealt with by spinning and other machines. The preliminary processes of the linen manufacture are consequently attended by the generation of much irritating dust, which produces shortness of breath, or asthma, with more or less bronchitis and a wasting of the body resembling what we see in pulmonary consumption. But the weaving of linen has this advantage over that of cotton—it can be carried on with a free admission of air into the sheds.

Here I must leave the examination of solid material employed in manufacture, and turn to that of fluids. Few observations are necessary respecting this section of my subject, inasmuch as fluids, when they do not act as immediate irritants to the skin, operate principally by giving off vapour—a subject belonging to my next division. Those exposed to the direct action of liquids are, for the most part, dyers and chemists. The former frequently employ dyes which are intrinsically of a poisonous quality, but, happily for them, the skin is a most resistant medium to their absorption. What they most suffer with is skin eruptions, annoying rather than dangerous. The chemist who deals with acid and caustic materials, as a matter of course, gets superficial and sometimes severe external injuries; and when substances throw off acrid vapour or gases the results may be still more serious, if not fatal.

These remarks bring one to the subject of vapours, which, for the most part, are obnoxious to the sense of smell, even if not otherwise hurtful. As examples of vapours of a positively injurious character, I may mention those of phosphorus and of bisulphide of carbon. Phosphorus, as we all know, takes fire when exposed to the air, and throws off dense fumes of phosphorous acid. It is used for various purposes in the arts, but chiefly in the manufacture of matches. Soon after the secret of compounding phosphorus with chlorate of potash and other ingredients, so as to make a mixture lighting upon friction, was discovered, it was observed that the people employed in the factories suffered with a remarkable and serious disease of the jaws, affecting the bones and destroying them. This circumstance was sufficiently grave, both to manufacturers and their employes, to stimulate researches to discover a remedy; and, happily, some few years since it was found that phosphorus in another form, namely the amorphous, could be used for match-making, with very little danger to those exposed to its fumes. This happy discovery has deprived the business of its horrors, and affords an excellent illustration of the value of scientific inquiry. The other element mentioned, namely, the *bisulphide of carbon*, is an essential material in the art of vulcanising. It is a pungent, exciting substance, acting strongly on the nervous system, and ultimately shattering the vital powers.

Again, we have a host of manufactures generating disagreeable if not positively noxious vapours, which may be classed under the general term of stinks. Such vapours proceed from calcining metals, from bone boiling, the making of artificial manures, cement, and of soap, of alkalies and chloride of lime, and a host of other trade products great and small. The general outcome of inquiries respecting the malodorous occupations is, that their effects on health are not very pronounced, and especially among those actually engaged in them. Outsiders complain of nausea, loss of appetite, headache, feeble health, and other grievances; and, doubtless, for the most part, not without reason. Exposure to gases in the course of employment is ofttimes a most serious matter, as experience shows in the case of men occupied in well-sinking and in mining, in those engaged in sewer work, and in various chemical processes, such as the making of sulphuric acid and bleaching powder, chloride of lime, and in those engaged in the manufacture of gas. But I must not linger on this topic.

It remains for me to notice a rather long list of surrounding morbid conditions associated necessarily or only incidentally with manufacturing operations. But after having so long detained you by my previous remarks, the notice must be very brief. The first and most prevalent of the conditions in question is exposure to heat, an attendant circumstance of many occupations, but happily not of very serious moment. Dry heat is borne with great impunity by the human body, but lesser degrees of heat accompanied by moisture are not so innocuous. One consequence common among those working in high temperatures is a proneness to suffer rheumatic affections, and inflammations of the chest; sufferings, however, rather due in a majority of cases to indiscreet exposure and indulgence in stimulants than to heat acting alone. Working in strong light for prolonged periods is a trial to the eyesight, and at times productive of permanent injury to it, but, so far as I can make out, not to the extent that might be anticipated. In the use of gas we meet with an injurious combination of heat and light, and too often with defective ventilation superadded. There is, in fact, great room for reform in the burning of gas. Much more is turned on than can be consumed in the production of the light required, and the consequence is the generation of unnecessary heat and the fouling of the air with the products of combustion. I would apply these remarks especially to warehouses and workshops. Noise is an accidental accompaniment of several occupations, and may be the cause of injury to the organ of hearing. I cite as examples the business of boiler making, and in a less degree that of engine fitting. Boiler makers are notorious for the prevalence of deafness among them.

Exposure to weather is a widespread condition of employment. It is seen in the case of outdoor labourers, farm servants and gardeners, of bricklayers, and many other workmen that your knowledge of occupations will bring to your mind. The category of diseases consequent upon exposure is so extensive that I should have to enumerate to you the majority of the ills to which flesh is heir, a proceeding I am sure you would deprecate. Friction, strain, overuse and prolonged attitudes are among other conditions of manufacture; and their consequences are seen in more or less bodily deformity, in the production of local thickenings or bosses, and of contractures of joints, and in weakening or restraining movements concerned in bodily functions; for example, where the attitude embarrasses the free movements of the chest, and consequently the freedom of lung action. This last-named occurrence opens up the whole question of sedentary labour in its connection with health, a topic ample for an entire lecture, and, therefore, not to be compressed in the closing paragraphs of that which I have had the honour of delivering to you.

In concluding it I must make apologies for its shortcomings. The subject was too wide for complete elucidation, and it is one that scarcely admits of pictorial illustration or of rhetorical adornment. Indeed it is particularly prosaic; and in order to bring in ever so slight reference to the more important occupations of a great manufacturing country such as we are proud of, it became necessary to condense matter and to curtail sentences with the effect of making it still more prosaic.

The members of the Geographical Society will admit I have travelled over a wide area in the ever-widening world of manufacturing activity; whilst all others present will, I trust, recognise in what I have said a profound desire to convey to them a correct impression of the sanitary aspects of the manufactures of Great Britain, which, by their magnitude, lay claim to our attention and interest, from whatever point of view we regard them.

The Slave Trade in Africa.—A correspondent writes: "It will come as a surprise that between Johannesberg (Transvaal) and the sea there are to be found slaves, stockades, slave markets, and men base enough to avail themselves of the trade in humanity. While travelling to Delagoa Bay, a short time ago, I received an intimation that a gang of white men of various nationalities were located in the Bomba Mountains, in the vicinity of the Umbulosi port, and that they were engaged in a traffic in native boys and girls. While scarcely crediting the statement, I determined to inquire into it, for the purpose of exposing it in the press. Accompanied by one white man named Wilson, together with a well-tried and trustworthy native, I turned my bridle westwards, and after two days' travel over the wooded plains of Tongoland, struck the Bomba Mountains, where I was received with hospitality by the natives, who earnestly warned me to abstain from meddling unless I wished to taste the vengeance of the desperadoes. Disregarding their warning, I rode on that evening and sighted the stockades of the slavers. On drawing near I perceived among the stones on either side of the road the suspicious-looking tubes of half-a-dozen Martini-Henry rifles. Notwithstanding these I rode steadily on, and in a few minutes found myself face to face with two or three exceedingly dirty white men and a dozen or so stalwart natives. There was an implied challenge in the 'Well?' with which they greeted me. Dismounting with every sign of friendliness, and leaving the horses with Munyosi, I approached them, and entered into general conversation. The justifiable suspicion with which they regarded me was not to be easily removed, and it was only by diplomatic and stealthy advances that I obtained a half-muttered promise that if I really wanted a nigger boy or two, they might, as a great personal favour, supply them. Girls, however, they assured me, were much more plentiful." The writer goes on to say, "A mounted Basuto galloped up and announced that his master, a Dutchman, named Potjecter, would be there that night for the purpose of purchasing a boy. I remained long enough to see the purchase effected, and the boy move off fastened to the leading-string of the front yoke of oxen in the Dutchman's wagon. Making an excuse, I saddled up and moved off with my attendants, followed by the threatening scowls of the men-hunters."—*Manchester Examiner and Times.*

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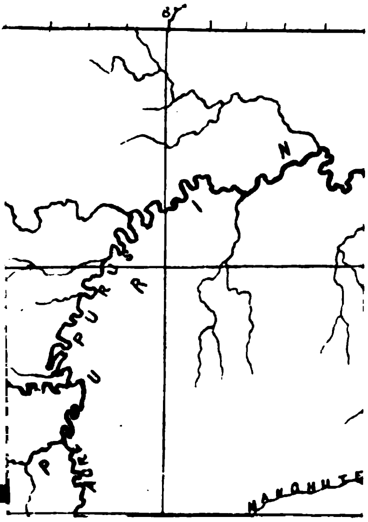

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AN ACCOUNT OF THE TRAVELS OF COLONEL A. R. P. LABRE, CARLOS FRY, AND OTHERS, IN PERU AND BOLIVIA—

AND ON THE BOTANY, NATURAL HISTORY, ETHNOLOGY, MEANS OF COMMUNICATION, AND THE GEOGRAPHY OF THE DISTRICTS TRAVERSED. *(See Map).*

By the Chevalier H. GUILLAUME, K.C.C., F.R.G.S., Consul-General for Peru at Southampton.

[At a Meeting in the Library, Friday, October 11th, 1889.]

HAVING been invited to impart the information I have received respecting the recent explorations in Peru and Bolivia by Col. A. R. P. Labre and others, I willingly give you all that lies within my power.

Very little information has been published respecting the interior of these countries since the important travels of Mr. Clements R. Markham, C.B., and Mr. W. H. Bates, some thirty years ago.

The failure of the scheme to construct a line of railway to avoid the tremendous rapids on the Madeira river has recently led to the important exploration of Col. A. R. P. Labre, of Brazil, and Señor Padre Nicolas Armentia, of Bolivia, to find a practicable means of communication from the interior of Bolivia and Peru. I will endeavour to be as brief as possible in describing the results of these explorations, commencing with those of Colonel Labre:—

It is interesting to note that this intrepid traveller has succeeded in achieving what Mr. W. Chandless endeavoured to do in his journey to these parts in 1865.

Colonel Labre, between the years 1872 and 1885, endeavoured to open communication from the Purus to the Beni. He explored the river Ituxy and its affluents several times, and he has supplied us with new geographical information respecting it. In 1884 he took two steamers up to the mouth of the Curykethé, 200 miles from the Purus, and established several indiarubber stations, which are still in existence. He received great help from the Hypurina nation in constructing a road. Unfortunately his efforts to reach the Beni were unsuccessful, owing to the hostility of the Indians when near the Abuna river; he therefore resolved to attempt an overland journey from the Madre de Dios to the river Acre, or Aquiry. In 1887 he left San Antonio, on the Madeira river, which forms the boundary between Peru and Brazil, and after a very tedious journey he arrived at Villa Bella, situated at the entrance of the Beni river, after having travelled 161 miles, which occupied no less than 34 days. As an instance of the difficulties experienced, I may mention that the passage of the Ribeira Falls, a distance of only three miles, occupied eight days. The cost of transit of goods is very great, being 35s. 6d. to 52s. 4d. per arroba (25lb.). From Villa Bella he continued his journey, and passing the Esperanza Falls he arrived at the mouth of the river Orton, where Dr. Vaca Diez has an indiarubber station, and he remained three weeks with him. The Orton river is navigable by steamer as far as the confluence of the Manuripy, a distance of about 300 miles. From thence he proceeded to Ribeira Alta, a rising town at the mouth of the Madre de Dios. He entered the Madre de Dios on the 1st August, and arrived at Maravilha, distant from its mouth 161 miles, on the 9th. Here Señores Marcaca and Mercier have a trading station. The Madre de Dios, being navigable by steamers, would be of immense advantage to Peru and Bolivia. From Maravilha he set out on the 11th, overland, with some of the Araonas Indians as guides, crossing the river Thauamanu at Budha, a tributary of the Orton, 270 feet wide, and following the course of the latter he arrived at Capa, 7½ miles below the confluence of the Orton and the Manurini. This place is on the direct road from the Acre to the Madre de Dios, which terminates at Amapo. On the 24th he crossed the Abuna or Caramanú (Cara = *seringa*, Manú = *river*), a large fallen tree serving as bridge. On the 30th he had the satisfaction of reaching Flor de Ouro, on the banks of the Acre or Uaquery, where Señor Manuel Joaquin welcomed him with great hospitality. He thus accomplished his much-desired aim, and to him belongs the credit of being the first civilised man who has crossed the regions between the Madre de Dios and Purus. The route traversed between Maravilha and Flor de Ouro was 113 miles, but by a direct road it would be reduced to 92½ miles. It would be an easy matter to construct a railroad between these two places, which, no doubt, would soon prove remunerative. Labre suggests that a road should be made from Correnteza to Guajara Miry, on the Mamoré (or Upper Madeira), a distance of 37 miles, to afford means for export of the produce of Matto Grosso; also the construction of a railway from Librea on the Purus, with a branch to Hamayta or San Antonio to Correnteza on the Beni. No costly works would be necessary, as the left bank of the Madeira offers no physical impediments to its construction; while, on the other hand, on the nearer and more direct route along the banks of that great affluent of the Amazons there are innumerable difficulties. The country also is free from the malaria which is so fatal in the neighbourhood of the Falls of the Madeira.

NAVIGATION OF THE MADRE DE DIOS.

TRAVELS OF PADRE FRAY NICOLAS ARMENTIA, OF THE COLLEGE OF MISSIONARIES OF LA PAZ, BOLIVIA.

Bolivia possesses immense territories, some imperfectly known and others completely unexplored, especially in the beautiful province of Caupolicán. Many large rivers traverse this exuberant region, all of which flow into the mighty Amazon, and afford to Bolivia a fluvial communication with the Atlantic. In consequence of the success of Padre Armentia in his former missions to the Araonos and Pacaguaras nations in 1881, he was commissioned by the Bolivian Government, in May, 1884, to resume his travels, on which occasion he navigated the Madre de Dios as far as lat. 12° 13′, exploring the rivers Beni, Madidi, and Orton, returning to La Paz in August, 1886.

The first recorded expedition to the Madre de Dios is that of the Inca Yupanqui, who attempted the conquest of the Mojos with 10,000 Indians in *balsas*,* but scarcely 1,000 of them arrived at Mojos—the rest perished by war, sickness, &c. The second was that of Pedro de Candia, with 300 soldiers granted him by Pizarro, but he also lost a large number of his people. The third was made by D. Diego Alemán, who was taken prisoner and afterwards made a general by the Indians to fight against other tribes on the banks of the Madre de Dios. The fourth by Juan Alvarez Maldonada, a native of Cuzco, with about 250 soldiers and 100 horses and mules, who were all killed by the Chunchos with the exception of Maldonada, Diego Martin, and Simon Lopez. This expedition was undertaken to conquer the famous "El Dorado," which we now know to be only a fable. The last expedition was that of Colonel D. B. Latorre, Prefect of Cuzco, in 1873, who was killed by the Sirineyros Indians above the juncture of the Inambari with the Madre de Dios.

Padre Armentia left La Paz the 29th of May, 1884, and reached Tumupasa on the 18th of July, where he remained until the 18th of September to obtain a crew, when he embarked at the port of San Buenaventura in a canoe with eight men.

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* Rafts constructed of a light wood called balsa.

Although drawing only three feet of water, they grounded several times, owing to the difficulty in finding the true bed of the river. They arrived in 13½ days at the mouth of the Madidi, where the river increases considerably both in volume and current. The actual time occupied in navigating from the Madidi to the Madre de Dios was six days. He commenced the ascent of that river on the 16th October, and continued until the 14th November. He visited the Araonos Indians, and was well received by them. At the beginning of 1883 there were no trading stations established on the Madre de Dios, and the Indians possessed no such tools as hatchets, knives, shears, &c., of modern make. All this is now changed. He found trading stations for collecting indiarubber, &c., which have provided the Indians with tools, &c. He resolved to make an expedition by land, but this he found exceedingly difficult, as it was necessary to carry all their things on their backs, and for this purpose he employed the Hamapu, Maru, Buda, and Odoary Indians On the 16th April he descended the Madre de Dios to Cavinas, which occupied 15 days, arriving there on the 2nd May. He returned on the 12th June, accompanied by Antonio Gil and Don Antenor Vasquez, who wished to ascertain if the river they had discovered in the previous November was the Acre. They ascended the Madre de Dios, and in nine days reached Nuanua, from whence they proceeded overland to the river Orton, which they reached after a tedious march of 15 hours, although in a direct course it is only 8½ to 9 leagues distant. They were satisfied that the river was none other than the Orton. Returning to the Madre de Dios, accompanied by Antonio Gil, he continued the ascent of that river, and entered the district occupied by the Araonas tribes, with the object of founding a mission. They found the survivors of five tribes who had been nearly exterminated by scarlatina, three of whom were attacked by a horrible leprosy like elephantiasis. Señores Vasquez and Gil were much fatigued, and obliged to abandon further work. Padre Armentia remained until the following January, visiting the several tribes, and, in consequence of the heavy rains and floods, he returned to La Paz.

A BRIEF DESCRIPTION OF THE RIVERS

THE BENI.—This river has its source in the high cordilleras, near the city of La Paz, and flows through hilly country until it reaches San Buenaventura, situated 14° 30′ S. lat. and 68° long. W. of Greenwich. From San Buenaventura the Beni runs through a plain about 780 feet above the level of the sea. The hills of the Sierra terminate here. The soil through which the Beni flows is composed alternately of sand and clay, which causes a continual changing of the river's bed, especially near the mouth of the Madidi. On account of the little softness of the soil the banks widen considerably in certain places—to as much as 1,950 feet—rendering navigation difficult, especially during the three dry months, August, September, and October, when it is very difficult to recognise the true bed of the river. As the banks of the river are low they are subject to inundations, and in some seasons the roads from Reyes to San Buenaventura and Port Salinas remain impassable the whole year, the waters reaching up to the breast of the horses and cattle, and even rising as much as 6 feet, as in the years 1885 and 1886. There are in places isolated banks where the waters never rise, and here all kinds of animals take refuge. After receiving the waters of the Madre de Dios the Beni becomes a majestic river, and is navigable without interruption up to the Esperanza Falls.

THE MADRE DE DIOS has its source in the Peruvian province of Caravaya, and is formed by the rivers Tono, Piñipiñi, Cosñipata, Pilcopata, Marcopata, &c. It is remarkable that from its mouth on the Beni, for 280 miles, it receives no important tributary, with the exception of a small stream on its right bank, called the Manuripi, which flows between it and the Madidi. It is believed that the Madre de Dios has a course of 400 miles of free navigation; whilst the Beni has a fall of 1,000 feet spread over a course of 850 miles—the distance between La Paz and the Mamoré, where its height above the level of the sea does not exceed 500 feet. The Madre de Dios has the same or even a greater fall, extending over a course not exceeding 500 miles. For 300 miles from its junction with the Beni the fall does not exceed 260 feet, the greatest decline being in the remaining 200 miles, where there are many banks of shingle, which makes the navigation of its upper waters difficult. In flood time the waters rise 33 feet. Its tributary, the Manuripi, is only 162 feet wide at its mouth. The Genechiquia and Nuanua are only streams about 48 feet wide, and fallen trees obstruct their course. From the Port Maru, as also from Chumu, to the river Manurini (an affluent of the Orton), there are from 22 to 26 miles of high land, with clear running streams. In the country lying between the Genechiquia and the Orton, for the first 8 miles, the land is subject to inundation, but beyond there is high land extending from 30 to 35 miles. Trading stations were not established on the Madre de Dios until 1883; now there are some three hundred men employed along this river.

THE ORTON, also called the Tahuamanu, Datimanu, or Turtle River, has not not yet been explored to its source. It is formed by the Manurini, Tutsemanu, and Maitsemanu. Probably its source is between 10° 48′ and 12° 30′ of S. lat. and 66° 20′ to 70° long. W. of Greenwich. Its course is exceedingly winding, and runs parallel with the Madre de Dios at a distance of 20 to 30 miles, discharging into the Beni above the mouth of the Madre de Dios at 10° 48′ lat. The country through which it runs is very low, and is therefore subject to floods. High lands are only reached after fifteen days' navigation. It has a course of 480 miles from the Beni to the Sierra and has about half the depth of water of the Beni, and although narrow at its mouth it afterwards widens to 195 to 393 feet. Its course is obstructed by fallen trees. At a little distance from its mouth a bank extends across it, and in the dry season hardly allows the passage of canoes of small draught. The Manurini—one of its tributaries—abounds in fish, and in August, 1885, one was caught 1½ yard long, its head armed with a spear 10 to 12 inches long and 1 inch thick at its base. There are immense forests of indiarubber on its banks. At lat. 11° 36′, the river is 327 feet wide and 39 feet deep, and on the north receives two affluents.

THE ABUNA.—The natives call this river the Uaicomanu. It discharges itself into the Madeira, near the Araras Falls. It receives on its right margin a river called Tsipamanu, signifying River of the Marayahu palm, on account of the abundance of that tree. The Abuna is larger than the Orton, and has large forests of seringa (indiarubber trees) on its banks. There are some falls on its lower part, near the Madeira, formed by the same ramifications of the hills which cause the falls on that river. There are but few Araonas Indians, but many Pacaguaras. Since March, 1885, many Araonas have settled on this river, on account of scarlatina and catarrh being prevalent in their old settlements.

THE ACRE.—Respecting this river, the Brasilian traveller, Col. Labre, has, during the last few years, endeavoured, by the aid of the Hypurinas Indians, to open communication between the rivers Purus and Beni, but has hitherto been unsuccessful. Señor Armentia is convinced that the distance between the Madre de Dios and the Acre is not less than 100 miles.

THE INDIAN TRIBES INHABITING THE MADRE DE DIOS.

There are no tribes on its banks below the hilly country. The sabandija (small insect) which abounds in the lowlands causes them to be uninhabitable, and the Indians have their dwellings at least four miles inland, so as to be free from the attacks of this tormenting pest. On the right bank, between the Madre de Dios and the Beni, below the mouth of the Genechiquia river, dwell two small tribes of the Pacaguaras. There are two tribes of the same Indians between the Madre de Dios and the Orton. Their language is the same as the Pana dialect. Above Genechiquia, on both sides, dwell the Araonas, who occupy a large extent of country, but the principal group of this tribe is on the left bank. On the right bank, a little below the Vasquez rapid, are the Toromonas, between the Madre de Dios and the Madidi, a little distance to the north-east of Isiamas. The Guarayos are a tribe of fierce Indians, occupying both banks of the Madre de Dios and Madidi, and keep up a continual strife with the inhabitants of Isiamas and Cavinas. They use large burnt-out canoes. They imitate the whistle of the tapir, and so get near it and kill it. They make their women work like animals, using them as porters. Their knives are made of chonta-wood, and they weave long cotton robes, called *masamahi*, which are only worn on festive occasions; at other times they go naked.

They believe in a Creator, whom they call Baba-Buada, who they say is the wind (Utana), that he resides in the air towards the south. They say that he created the sky, earth, sun, moon, stars, and everything that exists; that he presides over the seasons and arranges the seedtime and the harvest. They make two feasts to him, one before seedtime and one before harvest, when they sing, dance, and drink day and night.; drunkenness is, however, unknown. Besides Baba-Buada they have a great number of inferior gods: Juti and Mara-Edutzi, are gods of time.

Besides these savage tribes there are about 3,000 other persons occupied in the collection of indiarubber. The Orton was first visited by collectors in 1885, and Señor Doctor Vaca Diez was one of the first to explore it.

THE PACAGUARAS.—This tribe was formerly very numerous. There are now only one or two tribes on the Genesuaya and Ivon. They also bear the name of Chacobos, and are in communication with others between the Beni and Mamoré. They have relations with the Cayuvabas. There are three families at Orton, but one of them was exterminated by the Araonas, in March, 1885. They also dwell in considerable numbers on both banks of the Madeira, Mamoré, and Abuna, and I believe that the Hypurinas on the Acre and Purus belong to the same family. The men dress in long robes made from the shells of the Biboci, stained purple; the women, however, go naked. They pierce the nose and lower lip, in which they insert a *tacuarita*, about the size of a penholder, ornamented with feathers at both ends. They possess netted hammocks, and cooking pots of all sizes, and jars for carrying water. They cultivate maize, plantains, yoka (*Jatropha manihot*), camote (*Convolvulus batatas*), aji (pepper) and various kinds of sugarcane. They believe in a divinity, which they represent as a tiger's head, a pig, or some other animal, but they carefully hide their idols and religious rites from strangers. They call their god Papa-Guara, and his priests Roha. They hunt the greater part of the year.

The Toromonas.—These Indians occupy the territory between the Madidi and Madre de Dios, between 12° 13′ south latitude. The Araonas say that some of their tribes are fierce and that others are peaceful; they have numerous villages. Formerly they were friendly with the Isiamenos and Tumupasenos. It is believed that the assaults made on Isiamenos and Cavinas, in 1884, by the so-called Guarayos were in reality made by the Toromonas. To reach their territory it is necessary to ascend the Madre de Dios 240 miles, or go overland from Cavinas in a north-westerly direction.

The Guarayos.—The name Guarayos fills the Araonas, Isiamenos, and Cavinenos with fear, but little is known about them. They navigate the headwaters of the Madidi and Madre de Dios in burnt-out canoes, 33 to 60 feet long and from 18 to 28 inches wide. They inhabit the Sierra, and the greater part of the plain between Isiamas and Cavinas, on the bank of the Madidi. The Araonas give the name Guarayo to all their enemies, and they use it to signify to kill.

The Araonas and Cavinas.—These tribes have both the same idiom, religion, and customs. They live on the Manuripi, both banks of the Madre de Dios, the Orton, and even on the Abuna. The principal group now exists on the Orton. The Araonas have no burial-place, but are interred in their own dwellings. They have an innumerable number of abandoned villages. They have no canoes, and use rafts made of bamboo, for crossing rivers. In February and March, 1885, they suffered from an epidemic of scarlatina, which carried off about one-third of the people in some of the tribes, and nearly whole tribes in other parts of the country. Although so fatal to the Indians, the epidemic hardly affects Europeans, as the Indians do not take sufficient care of themselves. Some of these Indians are black and others red. Their diet is chiefly fish.

THE WOODS OF THE BENI, MADRE DE DIOS, AND ITS TRIBUTARIES.

The indiarubber; the cedar, red and white, for building furniture; the Palo Maria (*Callophilum Brasiliense*), a wood which contains much resin, and is used in the construction of canoes—it grows to the height of 160 feet; the tajibo and tape, tall trees used for building; the acuayacò, or paquito, and estoraque are very lofty, large trees of hard wood, used for sugarmills, and yield aromatic resin, and replace pitch for boats; the nogal, the bark of which is used for staining; the jacaranda (*Bignonia Brasiliana*), or rosewood; the almendra (*Bertholetis excelsa*); the Brazil nut; and many other beautiful woods known to the Indians.

The palms are in great variety. Amongst them are the asahi (*Euterpe oleracea*), which yields a fruit of similar taste to the chestnut. The patava, sayal, or majo (*Enocarpus pataua*): its fruit contains an abundance of oil of good quality; it is eaten with sugar, and is very pleasing and nutritious. The matacu and the cusa (*Attalea Humboldtoniana* and a *Spectabilis*). The fruit is very oily, and is used by the natives to grease their hair. In a dry state it is used to coagulate indiarubber. The jipijapa, called also the bombonaje (*Carludovica palmata*), is used for making hats. Vegetable ivory palm (*Phitelephas macrocarpa* and *P. microcarpa*) is used for making buttons. The palla (*Bromelia*) is the best palm for making the roofs of houses. The piassaba, a palm yielding a fibre extensively manufactured into cables, ropes, brushes, and brooms, being very elastic, strong, and more durable than hemp. The Moria-pinima, or tortoiseshell wood, the most beautiful wood in all Amazonia, if not in the world. The maçaranduba, or cow tree (*Mimusops elata*), one of the noblest trees of the forest—it stands from 180 feet to 200 feet, and 20 feet in circumference; it is a hard, fine-grained timber, with a valuable bark used for dyeing, yields palatable fruit and a milk resembling cream, which may be used for tea, coffee, and custards.

The botany of the region is exceedingly interesting, and in some respects unique.

Amongst the many plants of this region are the sarsaparilla, ginger, coca (*Erythroxylon coca*), vanilla, cinnamon, and the suyuyo, a soapy fruit used by the Indians for washing their hair, and the isiga, a small tree which yields an aromatic resin; the quina-quina, a larger plant, is also aromatic. The tamarind, the ajo-ajo, so called from its strong smell like garlic, is notable for the large quantity of potash it contains, which is used in the manufacture of soap and for refining sugar. It is a very large tree. The copaiba, noted for its oil, and the seibo and mapajo trees, which produce cotton in large quantities, and the caré plant, used to cure the sting of the serpent. The yuquilla, its root mixed with women's milk, is used to cure irritation of the eyes. The platanillo, similar to the plantain, stores up rain water, and by tapping its trunk about a litre of water can be obtained. The soliman (*Hura crepitans*), and the barbasco, the roots of which are poisonous, and when bruised are used to stupefy the fish in the rivers. The patillo, the root of which dyes like saffron. Bamboos of many kinds. Tobacco in large quantities.

Fruits, &c.—The banaña, pineapple, chirimoya,[*] sugar-cane, yucca (*Iatropha manibot*), papa (potato), camotes, convolvulus batatas (sweet potatoes), tomatoes, a kind of cherry called iudenú, many kinds of apples, the acaju (*Anacardium occidentale*), the fruit the size of a pear, the bark medicinal. The palta (*Persea gratissima*), the fruit, of a pear form, is very astringent and bitter.

The animals, birds, fishes, and insects, are chiefly—

1. Animals.—The largest is the tapir, also called the anta or danta, deer, the peccari or wild hog, and rabbits. The black bear or bee-eater (*Myrmecophaga*, Lin.). The paca (*Cavia paca*) is very good eating. Some monkeys, pumas, black and various coloured tigers (*Felis coruslor*, *Pawa soroca*), jaguar (*Felis tigrina*).

2. Birds.—The mutum or wild turkey (*Curassow*, *Crax alector*, *Urax*, *Pauxi*), the riva (*Ortalida momot*). Different kinds of partridge (*Ynambus*), pava or wild pheasant, the gray cienviento, and many kinds of brilliant-plumaged parrots, toucans, ostriches.

Aquatic Birds.—Batas, a kind of coloured stork, is very large. Many kinds of geese, the kingfisher, &c. The tapacare is a very large bird, which inhabits the vicinity of lakes, and has a large hard spur in one of the joints of the wings, which serves as an arm. The leke-leki has also the same provision. There are many kinds of herons and birds of prey. Snipes, widgeons, teal, storks, plovers, flamingoes, spoonbills, and numerous other waterfowl.

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[*] The chirimoya (*Anona tripetala*) Hanke calls a "master work of nature." It would be difficult to name a fruit possessing a more exquisite flavour. Markham says it resembles spiritualised strawberries and cream. In Lima the chirimoya is small, often only the size of an orange, but in the interior it often attains the weight of 16lb. It is of roundish form, externally green, covered with small knobs, with black network. The rind is thick and tough. The inside of the fruit is snow-white and juicy. Both fruit and flowers emit a fine fragrance. The tree is from fifteen to twenty feet in height.

Fish are numerous, the largest amongst them being the toro, which reaches 9 feet long, weighing 345lb. It has a grey back, with white stripes. The sache is a similar fish, weighing 200lb., with larger head. It is good eating. The pescado is the best eating, and is equal to cod or bream. There are many eels and turtles. Crocodiles.

Insects.—Bees in large numbers, mostly without stings, and many wasps, hornets, ants in great variety (*Esciton drepanophora erratica*). Spiders: The principal is the apasanca (*Migale avicularia*), which is larger than the hand can span. It is very venomous. Scorpions, crickets, glowworms, mosquitoes, sandflies, toads, &c.

The Indiarubber Tree (*Siphonia brasiliensis*).—It has an erect, tall trunk, from 40 to 80 feet high, a smooth, grey bark, and thick, glossy leaves. The milk resembles thick yellow cream. The indiarubber is collected in small tin cups or tubes of bamboo, called "tichelas," which contain about half a pint. Incisions are made in the trunk of the trees by a small instrument called the "machadino," which punctures to a depth of 1in. The sap when collected is smoked, by the burning of an oily nut (*Attalea Humboldtiana*), in layers on a wooden mould. The juice cannot be collected in wet weather or it is spoiled. Trees which yield a large quantity of sap often die the first year. Some yield 8½ gallons, some only 2 gallons. A man collects during the season about 625lb. The collection is suspended from August until January, lasting about six months or longer, according to the season.

The following barometrical and thermometrical observations were taken by Señor Armentia on the Beni, Madre de Dios, Orton, and their tributaries during 1885:—

	Place of Observation.	Thermometer (Centigrade) Average.	Barometer Average.	Wet and Stormy Days.
January	Beni, Madre de Dios	26° 8′	743	10
February	Beni	26° 7′	743·4	15
March	Beni	25° 9′	744·6	19
April	Beni	26° 0′	745·2	7
May	Madre de Dios	23° 9′	744	7
June	Madre de Dios, Orton	21° 6′	746·2	1
July	M. de Dios and tributaries	23° 6′	744·1	1
August	M. de Dios and tributaries	24° 1′	743·4	2
September	M. de Dios and tributaries	26° 2′	743·8	7
October	Beni	26° 8′	743·4	16
November	Madre de Dios	26° 8′	744·8	16
December	Madre de Dios	27° 2′	746·8	22

The storms are chiefly from the south and west.

The principal geographical positions are—

	S. Lat.		S. Lat.
Mouth of Madre de Dios	11° 00′	Mouth of the Orton	10° 48
Mouth of Genichiquia	11° 22′	Mouth of Genesuya	11° 23′
Mouth of Nuanua	11° 32′	Mouth of Biata or Genejoya	11° 44′
Mouth of Manuripi	11° 45′	Mouth of Madidi	12° 33′
Vasquez Rapid	12° 38′	Isiamas	13° 32′
La Cruz	12° 56′	Port Salinas (de Reyes)	14° 17′
Carmen de Tahuamanu	11° 36′	San Buenaventura	14° 26′

In reference to these rivers a concluding remark may be made that they are all navigable, but separated from the Atlantic by the Madeira Falls. When these rivers are opened up, we shall have roads for commerce, which will give life and animation to the country. What vast riches lie unknown on their banks!—precious woods, medicinal plants, aromatic bark and resins, textile plants—in a word, the most exuberant vegetation, the most variable, at the same time the rarest, perhaps, on the globe. Immense tracks of land, where man finds in abundance all that life requires.

THE GOLD REGIONS OF CARAVAYA AND SANDIA.

The explorations of Colonel Labre and Señor Armentia on the Madre de Dios and the opening of that river to commerce will greatly benefit these remote regions. I trust the journey which Colonel Labre is at present engaged upon will be the means of providing us with much fuller information respecting these regions, of which we have heard little since the memorable overland journey of Mr. Clements Markham in 1869, to collect specimens of the chincona plant. These provinces are situated in the most southern part of Peru, completely separated from the remainder of the Puno department by the elevated snow-capped Cordilleras, which seem to say to man, "Thus far shalt thou go and no further;" and it is surprising that the Spaniards in the early days dared to cross that colossal barrier, but it was solely due to their thirst for gold that stimulated these intrepid adventurers to traverse these tremendous obstacles which Nature has imposed. The earliest record we have of the discovery of gold in these provinces is very soon after the conquest of Peru, when some of the followers of Pizarro opened a rich mine called San Juan del Oro, where a town was founded. In 1553 the Viceroy, Don Antonio de Mendoza, found a nugget of gold at Quiaca, near Sandia, resembling in shape the head of a horse and weighing 122lb., which was sent to Spain as a present to the Emperor Charles V. In 1733 the Mint at Lima coined $1,143,026 in gold, principally brought from Caravaya. In 1808 the Indians rebelled against the Spaniards and massacred them. From that time to the present the mining industry of these provinces has never recovered itself. At the present time but few mines are worked, and these in a very primitive way. The Indians wash placer* gold in the rivers, and obtain annually about two quintals, or about 3,250oz., which they dispose of at the fairs. Señor Antonio Raimondi, the eminent Peruvian scientist, has devoted much study to these regions, and their position, as shown on the map before us, is taken from his work.

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* Placer means the detritus or bank of sand, &c., thrown up by the side of a river, also ancient bed of a river.

The reports of the engineers, Mr. R. G. Rosell and Mr. J. H. Simpson, published in Lima a month or two ago, state that gold exists in these regions to an unlimited amount. Access to the mines is very difficult on account of the steepness of the hills, the so-called roads being simply narrow tracks cut in the rocks or through the woods by axes, where mules cannot pass, and the only means of transport is on men's backs. Cattle in some of the districts is abundant, an ox or cow selling for $10, and a sheep for $1.

The climate in these districts is healthy, there being no extremes of heat or cold. The rainfall is very copious, and from November to March rain falls almost continuously. The evaporation is very considerable, owing to the low pressure of the atmosphere, more than 50 per cent returning to the air in the shape of vapour, while 5 to 6 per cent is lost by filtration.

Gold is disseminated throughout the whole of these regions. Mr. Rosell found from picked samples of ore taken at Ananea no less than 7,000oz. of gold per cajon;[*] 1,800oz., 943oz., and 28oz. per cajon in other samples. The known quantity of auriferous lands in the Sandia province is 11,021 million cubic metres, and the estimated value of the gold in those lands is about £300,000,000 sterling. There are also mines of coal, copper, lead, marble, jasper, &c. The population of Sandia is 12,721, consisting of Indians, who are very peaceable and willingly work for the whites. The extent is 4,254 square miles. Caravaya is very scantily populated, containing about 8,000 people. The regions to the northward are unexplored and occupied by the savages.

There can be no doubt that the explorations already made by Colonel Labre and those he is still making will be of immense benefit to these regions by opening them up to the outer world, and it is to be hoped that the railway advocated by Labre will soon be constructed, joining the Madre de Dios with the Amazon. By the Inambari these provinces can be reached by passing overland 400 metres, or 1,281 feet, above the sea, whereas the present route across the Cordilleras is from 14,000 to 18,000 feet above the sea.

TRAVELS OF SEÑOR CARLOS FRY, OF CUZCO.

I now proceed to the travels of Señor Carlos Fry, of Cuzco. They refer to the Ucayáli and its tributary the Urubamba, which form the great artery to the interior of Peru. The Urubamba has its source at the foot of the Vilcanota Mountains, 16 miles from Santa Rosa. It is first called Vilcanota, then Sicuani,

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A Spanish cajon consists of about 3 tons Spanish, of 2,000lbs. each=6,000lbs., or about 2¾ tons English.

afterwards Calca River, then the Urubamba. It flows through deep fertile valleys, on either side of which are continuous terraces,* on the slopes of the mountains, extending for hundreds of miles. In the valley are situated the city of Cuzco, the ancient capital of Peru, Pisac, Calca, Chinchero, Yucay, Urubamba, and Ollantaybamba, the ruins of which are probably contemporary with the giant cities of Bashan.

When we beheld the ruins of these and other cities, gigantic temples and fortresses, the immense irrigation works, and the extreme utilisation of the soil of which China and Japan alone afford a parallel, they testify to the former existence of a great civilised population, which could not have been less than 100 millions.

Señor Fry's travels were undertaken for the purpose of discovering accessible ports, to which roads could be constructed to form an outlet from these rich regions, and to find suitable parts for colonisation. After working one month constructing canoes, the expedition, consisting of himself, three friends, and the necessary followers, left Rosalina on the 28th October, 1886. This place is distant from Paso de Chahuares 14 leagues, which was famous for being the point of embarkation in 1847 of the expedition of Count Castelnau, Padre Bosquet, &c. The latter unfortunately lost his life in the expedition. Since then a road has been constructed to Rosalina, which has served for a starting point. They reached the port of Tonquini, or Sihuanira, on the 30th October. The passage of Tonquini is a gigantic fissure through the middle of a range of hills, and has the appearance of two colossal portals, through which the river flows. The series of rapids end here; from thence the river is called Lower Urubamba, and is navigable by steamers. In three days they had travelled, owing to the bends in the river, 120 miles, but by direct road by land from Rosalina to Tonquini it would only have been 60 miles. The journey down was a most perilous one on account of the rapids, and at the last one he had the misfortune to be shipwrecked and lost his scientific instruments, &c., and was obliged to adopt the garb of an Indian. They passed the river Lavero, which flows from the gold regions of Paucartamba, and a short distance off a long range of hills containing coal, called "Mapiruri" (stone) by the Campas. They left Tonquini on the 5th November, and arrived at Providencia on the 12th. This place is situated at the confluence of the Urubamba and Tambo rivers, which together form the Ucayáli. The geographical position is 10° 41′ S. lat., and is 861 feet above the sea level. The depth of the river is from three to four fathoms, and the current two knots per hour. The distance travelled from Tonquini was about 320 miles. The regions passed were quite a paradise, abounding in luxuriant vegetation, with lofty hills and sloping plateaus, and clear running streams. This description fully agrees with the account of Mons. Charles Wiener, the eminent French explorer, who writes: "When I entered the forests of Mayniqui I found myself in one of the most beautiful regions of the world." They had splendid sport, both fishing and shooting, and the climate was delightful. An Italian named Anto. Calnagui has a trading station here. There is also a settlement of the Piros Indians, who number about fifty. In consequence of some marriage festivities among the latter the expedition could not obtain canoe men, so, availing himself of the delay, Señor Fry resolved to explore the interior. The festivities over, they left Providencia on the 8th December, and reached the mouth of the Unini on the 10th. Here an important station is established, the Indians have roads leading to the interior, and it would be advisable to make roads following the same course as theirs, and so reach the capital by a short route across the Pajonal. On the 14th they reached the Pachitea, a very important place. Many commercial houses are established, and large steamers trade here regularly, though seven or eight years ago the place contained hardly a single hut. The river Pachitea was the scene of the massacre of Lieutenants Tavara and West, of the Peruvian navy, in the year 1866, by the Cashibos Indians, who ate them; but trade has civilised these Indians, and they are now as friendly and civilised as the Campas and other tribes. This river is navigable for steamers as far as Mayro, and has a depth from seven to nine fathoms. The remainder of his journey down the Ucayali was by steamer. Leaving Pachitea on the 23rd January they passed high lands with cattle, and on the 26th they passed the Pampas del Sacramento, an immense forest-covered plain extending over 180,000 square miles of virgin soil, the river being here half a mile wide and 20 fathoms deep. It was here they first experienced the insect pests—mosquitos and sandflies. On the 29th they entered the majestic Amazon, with a depth of 35 fathoms, and reached Iquitos at 10 a.m. on the 30th. Iquitos is the chief Peruvian port on the Amazon. In 1866 this place had only 1,000 inhabitants. Now it has a population of 8,000, five-sixths of which are half-caste and civilised Indians, the rest South Americans, Europeans, and a goodly number of Chinese. There are many commercial houses, each of which has one or two steamers all flying the Brazilian flag. The imports and exports amounted to $2,000,000, the principal article of export being indiarubber. The distance they had travelled from Cuzco to Iquitos was almost 530 leagues, viz., 40 leagues by bridle paths, 190 by canoe, and 300 by steamer.

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* Andencria, or terraced gardens.

THE INDIANS.

The Indians of the Urubamba are as follows: The first they met were the Campas. They occupy the margins of the Urubamba and Tambo. They are very friendly with the whites, who have taught them trading, which has been the most powerful agent in civilising them. They greatly appreciate the blessings of civilisation. The Piros dwell on the Lower Urubamba and Upper Ucayáli, as far as Sibunya. They are very peaceable, trading with the whites and working for them. As canoe men they are without rivals. The women dye the hands and feet black, to imitate the gloves and boots of the whites, with the hintoc root (*Genita oblongifolia*), which also cures eruptions of the skin. The Conibos and Shipibos dwell on the banks of the Ucayali. They dwell very extensively with the whites, and are very peaceable, appreciate civilisation, wear European garments, speak Spanish and Portuguese, and are very intelligent. They imitate the whites in exchanging visits. When entering their dwellings they offer one a seat and shake hands, drinking health with ceremony. But unfortunately they still retain some of their savage customs. They compress the heads of their children between two small boards, causing the head to assume a conical shape. The deformity of some of the skulls found in the ancient *huacas* (burying places) may be traced to this custom. Another barbarous custom is that of interring fretful children alive—the mother herself making a hole in the ground and burying them. If one of their family fall ill, they hold a council, and usually conclude among themselves that he will not recover, and make no effort to restore him to health. The gradual extinction of the aborigines of these regions may possibly be attributed to this custom.

Amongst the cultivated crops of the region of Urubamba and the Ucayáli, as mentioned by Señor Fry, are—

The plantain (*Musa paradisiaca*). There are about twenty varieties. The yuca (*Manhiot-aipi*), the root of which is boiled and eaten, or made into flour for bread, cakes, &c. Rice, maize, maní* (*Arachis hipógea*), sandilla or sandía (*Indicus melopepo*), coca (*Erythoxylon coca*). With the dried leaves of the coca plant and a little crushed corn the Indians will stand a surprising amount of fatigue—in fact, will go without food or sleep for days. The leaves are gathered and dried in the sun. The flavour is somewhat like green tea. It is now largely imported into Europe from Peru, and is manufactured into a drug called "cocaine," and supersedes the use of chloroform for relieving pain. Tobacco, cotton, coffee, piña (*Bromelias ananas*). Pacae (*Inga vera*) exists on all the banks of the rivers. The grapes are of immense size, Marañón (*Anacardium occidentale*) an excellent fruit, and the blossom yields a delightful aroma. Palta (*Persea gratissima*), papaya (*Caricapapaya*), oranges, citrons, lemons, ají (*Capsicus*), papa (*Solanum tuberosum*), llacón (*Polimnia sonchifolia*). Magona—similar to the potato, very floury—frejoles (*Phaseolus*), beans, achiote (*Bixa orellanum*)—used for staining the skin, garments, and pottery. Palillo

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* Maní is a kind of small pulse, like East India "gram."

(*Campomanecia cornifolia*) is used for the same purposes as the former, and grows spontaneously between the Tambo and the hills, in the vicinity of the Urubamba. Camote (*Batata edulis*). Sugarcane. Cusi, a kind of pumpkin. Tomatoes, cabbage, lettuce, parsley, and other herbs abound. Tumbo (family *Pasifloraceas*), an immense creeping plant, producing an excellent fruit. Piñón (*Curga purgans*). Mandioca or cassava.

Trees of the Forests.—The indiarubber (*Siphonlia elástica*), which forms the chief industry of these regions, and is exported largely to Europe and North America, which has been a powerful factor in civilising the hordes of savages on the Ucayáli and its affluents. The llamchama, the bark of which tree is made into hammocks and mats. Cedars, red and white, mahogany, vanilla, sarsaparilla (*Esmilax oblicuata*). Yarina (*Phytelephas macrocarpa*) is very abundant, used for roofing of houses, the nuts of which, when ripe, are known as vegetable ivory, and are exported in large quantities to Europe. Matico (*Arthante elogata*). From it is made an excellent stomachic beverage, and it is also used as a balm for wounds. The huaco (*Mikania guaco*) has the same properties as the matico. Barbasco (*Taquinia armilares*), the bulbous root of which is bruised and thrown into streams, and stupefies the fish. Nogal (*Juglas*) is a hard wood, like teak. Capirona, a hard wood, used for fuel on the steamers. Quello-caspi (*Olmedea aspera*) is used for buildings and mills. Rumi-caspi, or stone wood, as hard as teak. Remo-caspi, used for making oars, cups, &c. Pona is split into laths and made into baskets, roofs, chairs, &c. Huitoc (*Genita oblongifolia*), used for staining the skin, and for skin diseases, erysipelas, &c. It contains more than fifty per cent of tannic acid. Sitica (*Secropia peltata*). The trunks are hollow and contain bees, and a great quantity of wax is obtained from these trees. There are many other trees which contain wax. Chambira (*Astrocaryum*), the shoots of which make strong twine. Chonta (*Bactrix ciliata*), used for making bows, mosquito nets, lances, harpoons, &c. Tarapoto (*Coricea ventricosa*), used for making canoes. Caña Braba (*Cinerium sagittatum*), used for poles, and the smaller shoots for arrows. Canela cinnamon. The bark is aromatic, and is used for curing dysentery. Cascarilla grows on the hills between the Urubamba and Tambo, and is a valuable febrifuge. The chamairo, a cane, taken with coca and chalk, and mixed together, yields a palatable taste. The bombanaji (*Carludovica palmata*), used for making hats cigarettes, &c., exists in great abundance. Indigo. There are great clusts of these shrubs. The puca-puca (*Colorado*), used for dyeing red. Copal, used for its resin and for tarring canoes. Vegetable wax. There are many different kinds. Lagarto caspi (*Palo lagarto*), used for making canoes. The caimito and the guayaba, of the size of apple trees, yield exquisite fruit. The cocobolo, a black wood, which takes a fine polish. The bolaquiro, a very hard wood, used for mortars, and for grinding cocoanuts, sugarcane, &c. The chirimoya (*Anona tripetala*), a most delicious fruit. The maza-zamba, a similar fruit, but larger. The sapote (*Archras sapota*), a very sweet fruit. The pala de balsa. Balsa wood (*Ocroma de piscatoria*). The palo-balsams or estoraque. The chigalo, a palm which contains a nut, which, scraped and boiled well, produces a drink similar to cow's milk. Grandadilla (*Pasiflora ligularis*). It is of a delicious taste. Ccuicho-hapi, a shrub, which grows erect, and being very flexible serves for fishing-rods. The cinnamon, ipecacuanha, and camphor trees grow wild everywhere. The comalocso, a tree the bark of which yields the strong fibre used by the Indians for bowstrings. Piassaba is the fibre from the petioles of the palm (*Leopoldinsia.*) Gramalote or sorgho, of which there are many varieties used for fodder of cattle. Orchids of the softest tints.

It would be difficult to enumerate all the vegetable productions which grow on the banks of the Ucayali, Urubamba, and

Tambo, many of which, yet unknown, may be of great commercial value.

Wild Animals, Fish, &c.—The danta *(Tapirus americanus)*, the flesh of which is similar to beef. It is the size of a large mule, and can be domesticated. The huangana, or mountain hog, or wild boar, is always in herds of 80 to 100 animals. Its flesh is edible. The macoz o sihuayro is good eating. The quirquincho is caught n the hills. The vaca marina, or cow-fish, feeds on grass on the margin of the rivers, is found on the banks of the Ucayali. It resembles the seal, is 7 feet long and 6 feet round the body. Its flesh resembles pork, and a large one will yield 250lb. of fat. It has a semicircular flat tail, and behind the head are two oval fins, behind which are the breasts, which yield a white milk. The paiche is similar to the former, but smaller, and when salted affords an active trade on the river. The pirarucu (Sundas gigas), a fish eight feet long. The charapa, or tataruga (*Podocnemis expansa*), or river turtle, weighs from 100lb. to 126lb., and forms an abundant supply of excellent food. They are found in immense quantities on the beaches of the Ucayali, in the months of August, September, October, and November, when it comes from the water to deposit its eggs. The natives sell the eggs, and more often extract the oil, which is one of the chief articles of trade. The land tortoise, the flesh of which is excellent. The amjiri or pacho, a fish which weighs 40lb., and is salted, and many other fish. Very large deer roam on the plains and mountains, called huauco or puca-taruka. They are very wild. The bear, called hocamari, which makes small stages on the trees. A kind of boa, yacu-mama, or mother of the water. The tiger has a golden yellow skin, with circular black or copper-coloured stripes. It is not fierce, and does not attack man. The jaguar (the yana-puma) is somewhat dangerous. If not killed at the first shot, often turns on the nearest sportsman. Pava, or wild pheasant; patos royales, or black ducks; geese, storks, plovers, &c. Birds of the rarest plumage, and butterflies of the brightest hues.

Señor Fry says: "Without mentioning more specimens, any person provided with a gun and a handful of salt may travel 400 miles without ever wanting food, from the abundance of game; and an Indian with his bow and arrow is able to furnish a meal better than like of which many people in civilised places would be too eager to obtain."

RAILWAYS WANTED TO DEVELOP THIS DISTRICT.

The most important railways required to be constructed to develop these regions are the following: (1) From Mayniqui to Rosalina, 240 miles, from thence to Cuzco. (2) From Acon on the Ene to Huanta, 112 miles, thence to Ayacucho. (3) From the Unini across the Pajonal to Tarma, thence to Lima, the capital. There are no serious obstacles from an engineering point of view to the construction of these railways. Mons. Wiener writes: "One asks with surprise why the proprietors of the rich Urubamba valley have not constructed a road following the course of the river, instead of imposing upon themselves the difficulties of crossing the bleak Cordilleras." For want of roads the goods to and from the interior are conveyed from the west coast by mules and on men's backs, at the enormous cost of from £40 to £80 per ton, according to the season and class of goods, consequently only the most valuable goods can be exported. The goods are placed to a further disadvantage by losses sustained by weather, bad roads, &c., the mule with its burden being frequently precipitated into deep ravines, the poor animal furnishing food for the condor, and its valuable load irretrievably lost. Few, perhaps, are the enterprises of the present day that would prove so remunerative to the projectors as the construction of the railways alluded to, and would mark a new era of prosperity to these countries. There would be available for export, from the forests and plains, indiarubber, cinchona bark, coca, vanilla, sarsaparilla, tobacco, cotton, indigo, dyewoods, batsums, gums, resins, beeswax, coffee, cocoa, vegetable ivory, &c., and from the descending plateaus of the Eastern Cordilleras alpaca and other wools, hides, &c. From the mountains, gold, silver, copper, lead, diamonds, emeralds, and other precious stones.

The region best adapted for colonisation is the triangular basin situated between the rivers Tambo and Urubamba, comprising an area of 6,000 square miles, freely intersected by rivers, most of which are navigable, possessing means of communication direct to the Atlantic by the Ucayali and the Amazon, and as soon as the railways I have referred to are made, they would put the district into communication with Cuzco by Mayniqui, to Ayacucho by Acon, and to the capital by the Tambo and Unini rivers.

From the information I have been able to give, I think it is easy to understand what a bright future is in store for these countries, when by means of railways the interior will be connected with the navigable rivers, and these rich territories transformed into a scene of active commerce and placed in direct communication with the markets of the world.

CONCLUSION.

In conclusion, I may say that the Government of Peru and its people have but one aim, the development of their rich and beautiful country, which they have thrown open to the civilised world; and I trust the day is not far distant when the self-sacrificing efforts of these intrepid pioneers of progress—Raimondi, Labre, Fry, and others—will succeed in attracting to these vast regions, at present only sparsely populated by semi-civilised savages, the capital and enterprise of Great Britain. It is necessary, in view of the ever-increasing population of the British Isles, that every outlet which appears at all favourable should receive careful consideration; and I feel certain that if the claims of Peru were better known to Englishmen, they would readily avail themselves of the advantages that country offers.

HIS GRACE THE DUKE OF DEVONSHIRE, M.A., K.G., F.R.S.,

The First President of the Manchester Geographical Society (see frontispiece to this volume).

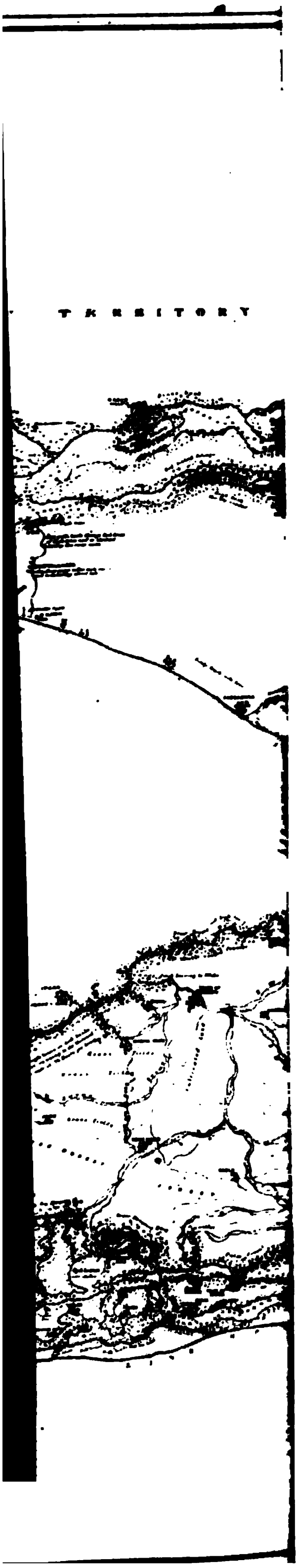
THE DUKE OF DEVONSHIRE, president of the Manchester Geographical Society, unites in himself the claims of exalted station, of the highest personal character and public services, and of a distinguished academic career. For a eulogy of his grace as a member of the House of Peers or as a great landlord this is not a fitting place. It is as the president of a learned society that this brief notice regards him; and we may, therefore, with propriety, recall the brilliant honours which he won as an undergraduate of the University of Cambridge, and the great public services which in his long career he has since rendered in the cause of education and science.

As Mr. William Cavendish he entered Trinity College in 1825, and in 1829 he graduated second wrangler and gained the first Smith's prize, Mr. Philpott (now Bishop of Worcester), who was senior wrangler, having been beaten by Mr. Cavendish in the subsequent contest for the Smith's prizes. Mr. Cavendish also gained the eighth place in the first class of the classical tripos.

A University career of such marked distinction has been followed by an equally remarkable series of high academical offices. The Duke, as Earl of Burlington, was the first Chancellor of the University of London, holding that office from 1837 (the year of the foundation of the University) to 1856.. In 1861 he was elected Chancellor of the University of Cambridge, in succession to Prince Albert. In 1870, on the incorporation of The Owens College by Act of Parliament, the Duke was chosen first president of the College under its new constitution; and in 1880, on the foundation by royal charter of the Victoria University, he was nominated in the charter to be the first Chancellor of the University. These three offices the Duke of Devonshire still holds; and, his advanced age notwithstanding, it is well known that his grace is never wanting to the interests of the institutions over which he presides.

Among many other services performed by his grace we may mention his conduct of the investigation held by the Royal Commission appointed in 1870 to inquire into and report on scientific instruction and the advancement of science. Of this commission the Duke of Devonshire was chairman. The commission, after an exhaustive inquiry, reported in 1872. That report, with the evidence collected by the commissioners, and the recommendations which they drew up, may be treated as the starting point of the great advances made in the last fifteen years in the higher instruction in science, in the establishment of public museums, and, still more recently, in the promotion of technical schools.

The Duke has never failed, when opportunity has offered, to promote institutions established for the advance of scientific culture. On the foundation of the Manchester Geographical Society he immediately gave the most valuable assistance, and we congratulate our members on having obtained his consent to act as our first president, an office which we trust he may long continue to fill.


TERRITORY

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THE LAGOONS OF THE BIGHT OF BENIN, WEST AFRICA.

By MR. ALVAN MILLSON, M.A., Assist. Colonial Secretary, Lagos.

[Read to the Members, in the Library, by Mr. J. A. Swanwick, Monday, December 16th, 1889.]

WHEN the Landers came ashore on the West African coast in 1830, on their celebrated expedition, which resulted in the discovery of the true mouth of the river Niger, they landed at the then notorious slave station of Badagry. Passing safely through the triple line of foaming breakers which continually rush in upon the open coast, they were, to use their own words, "flung up upon the burning sand" in the canoe which had transported them from the vessel in which they arrived. They then crossed a narrow strip of sandy, grass-covered plain, some 1,400 yards in width, and reached a short creek, which carried them into an expanse of water which they very properly name the Badagry river. This river was wide and flowing towards the east. It ran parallel to the coast, and on the opposite or inland bank, full half a mile away, stood the town of Badagry, lined out along the river side. The elder Lander, who tells the tale, remarks on the beauty and lake-like appearance of this water, though even its lake-like appearance upon which he dwells does not lead him to mistake its true nature. This he left to the wiser spirits of our generation, who, in spite of the fact that it is a moving water, flowing continually in one direction, and with a current of no small rapidity, have perversely named it the Victoria Lagoon, a portion of the more properly named Western Waters of the colony of Lagos.

To most of us the word "lagoon" brings either thoughts of mud and mangroves, alligators, slime, and evil smells, or visions rare and delicate of limpid waters lapping up against barriers of foam-fringed coral reef—sheltered basins of transparent sea-water, floored with white sand and full of brightly-coloured fish and gaudy shells. The lagoons of West Africa have the reputation of belonging to the former class. One hears of them with a shudder. Visions of stagnant, rotting water, of fetid mud swarming with crocodiles, of putrid stenches and deadly calentures flit over our revolted minds. In the matted woods that surround them death rules triumphant, and the unnatural horrors perpetrated by their naked inhabitants cloud the imagination with distressing thoughts. Each trader vies with the last in his highly-coloured pictures. Even the tales of respectable travellers are full of wild and horrible descriptions, which have taken shape in minds obscured by the depression of malaria, or wearied by the monotony of life on the dreary shores, or in the more dreary interior of the Dark Continent. One reads of interminable forests, of degraded savages, of cannibalism, fetish, and slavery, and in the face of such an accumulation of horrors one is tempted to leave that much-bewailed country to dree its weird in its own way.

As a matter of fact, we have, in the inland waterways of the Bight of Benin, a most remarkable instance of delta formation, unlike what is found in any other part of the world. A glance at any good map of West Africa—and I am sorry to say that few such exist—will show that as soon as Cape Palmas is fronted the shore line is backed by a succession of lagoons and waterways which run parallel to the coast, and into which the rivers flow which drain the southern slope of the watershed which feeds the right bank of the river Niger towards the north. These waterways may be said to extend for nearly three hundred miles, as far as the rocky headland of Cape Three Points, where the mountains of Ashanti throw their spurs out towards the sea as far as the Volta river, forming the rocky shores of the Gold Coast, upwards of two hundred miles in length. Of this first set of littoral lagoons we know but little. The Krumen who inhabit that part of the coast are jealous of the intrusion of the white men, whose ways they so carefully study in their capacity of servants-of-all-work on board the steamers, and in the trading factories of the coast.

From the river Volta, again, we have a still more remarkable chain of waters, running with little or no interruption for five hundred miles, as far as the Benin river, which, though of independent origin, yet has communication, some eight miles from its bar, with the Forcados river, the most westerly of the twenty-two mouths of the great Niger. Of the first half of these waters, including the Avon Lagoon and the channels which lie behind Bagdah, Porto Seguro, Little Popo, Grand Popo, Whydah, and the Dahomian coast, I do not propose to speak. As the object of this paper is to study the nature and formation of this so-called lagoon system of West Africa, I have found it convenient to confine myself to the consideration of that portion of the system which has been carefully surveyed and mapped—namely, that which extends from the Denham Waters on the west to the Benin river on the east, a distance, roughly speaking, of 250 miles.

The map now exhibited gives an exceedingly accurate representation of this part of the coast. It was drawn by the present harbour master of the colony of Lagos, Captain Speeding, after a most careful survey, and has embodied in it the survey work of the late Sir John Glover, as well as the results of many years' study of the country by our present governor and his subordinates. The most important portion, as far as Arogbo, where is found enough water for steamers, towards the Benin river, which is marked as unsurveyed, has within the past few months been fully explored, under the direction of Captain Denton, the administrator of the colony during the absence, on leave, of the governor. As shown on the map, it may be taken as an accurate though rough sketch of the channel which leads into the Benin river. I have been led to confine myself to the data given in this map, for the reason that it shows the only portion of the coast which has been accurately surveyed in sufficient scale to make the details clear, and because there are also shown in it some, at least, of the swamps which run parallel to the existing waterways. My reason for taking these into consideration will be explained further on.

Were it possible to exhibit an equally accurate survey of the whole coast line of the Bight of Benin, it would be seen that a chain of wide expanses of shallow water, and deep, river-like passages of running water, extends, as far as we know, without interruption of a permanent nature, from the Volta to the Niger. In many places these lagoons and channels approach to within a quarter of a mile of the ocean, and throughout their course run parallel to the sea-coast. It would also be noticed that each of these wide expanses of water, such as the Avon Lagoon, the Denham Waters, the Porto Novo Lagoon, and the Lagos Lagoon, receives the drainage of one or more river valleys, which carry large volumes of water from the spurs of the tableland which forms the southern water-parting of the Niger valley. These uplands are generally known to map makers as the Kong Mountains, but it appears from a recent report of a French explorer, who has spent two years among them, that they form the western limit of the central tableland of Africa, through which the Niger has cut its way to the sea at the back of the coast ranges. Draining as they do a considerable expanse of country, which is subject to an annual rainfall of not less than 100 inches, and running, for the greater part of their course, through the centre of primeval forests, which prevent them from becoming mere upland torrents, these rivers carry a steady volume of water even during the dry season. During the rainy season they increase with marvellous rapidity, and pour forth immense volumes of sand and mud into the lagoons into which they open. Such a river as the Opara, for instance, may be safely said to carry more water than the Thames, and as its course lies through insoluble rocks, the solid matter which it carries to the coast is almost entirely held in suspension.

Livingstone, in his "South African Travels," came upon what he graphically names "sand rivers"—currents of sand moving along with a comparatively small amount of water. In trying to ford them he felt thousands of particles of sand and pebbles striking against his legs. This was in the dry season, and he was impressed by the enormous quantities of detritus that must be removed by these streams in the rainy season. The quantity of sand brought down by these West African rivers during the rains must be seen to be believed. It has been estimated that the Thames discharges annually into the sea no less than 1,865,903 cubic feet of sediment, without counting the enormous quantity of solid matter held in solution in its water. Consider the case of these tropical rivers, not less in volume than the Thames during the dry season and infinitely greater during the rains—consider the fact that the detritus they carry is almost pure silica, and consequently nearly insoluble—and you may form a rough estimate of the amount of solid matter which is continually discharged by them. There is a further and still more wonderful difference between these rivers and the Thames. Much of the detritus brought down by the Thames is swept away by the currents of the sea. On the other hand, it has already been seen that such rivers as the Opara debouch into a large lagoon of almost standing water, into which they pour their load of sand and mud. The consequence of this is that a very small percentage of the solid particles which they bring down to the coast is distributed by the ocean currents, and their power as agents for building up new land is indefinitely increased by this fact. Of the reasons for this unusual arrangement I shall have more to say later on.

I will now consider in detail that portion of these inland waters which is shown on the map now exhibited.

Starting from the westerly extremity of the map, which begins near the second degree of east longitude, we see the Denham Waters. This lagoon is bounded on the north and west by the kingdom of Dahomey, on the south by the French trading port of Kutonu and a portion of the Frah kingdom—a British protectorate—and on the east by the French settlement of Porto Novo and by another portion of the Frah kingdom. It is about thirteen miles in its greatest length by about seven miles in width from north to south, and its area may be roughly estimated at seventy square miles. At its north-western corner it receives the waters of the Zunu or Eso (Is-aù) river, a branch of the Opara, which flows from the highlands of Dahomey, and represents the geographical boundary between the Éwé and Yoruba areas. Though connected near its mouth with the Opara, it also receives tributaries on its right bank, and has an independent source. It thus forms a portion of the Opara delta, and at the same time contributes largely to the work of silting up the Denham Waters. The average depth of the Denham Waters during the dry season does not exceed three feet. The water delivered by the Zunu river, flowing slowly towards the east, has made a definite channel across, or rather along, the lake, of from five to seven feet in depth. The Zunu river itself, beyond its mouth, is a deep and sluggish stream, flowing through low and level land.

In the towns of Awansori and Afotonu we have striking examples of the lake dwellings which the inhabitants have made in comparatively recent times to escape from the Dahomian slave raids. They are towns containing upwards of one thousand inhabitants, whose life is spent in canoes and in huts suspended upon piles. It is a somewhat exciting adventure to pay a visit in these towns. One has to be somewhat of an equilibrist both by nature and education.

In the rainy season the waters of this lagoon swell to an amazing extent, a depth of over twelve feet being shown in its shallowest parts. The surrounding country is submerged, and the narrow Kanji Agege and Toche channels, through which it discharges into the Porto Novo lagoon, are strained to their utmost capacity. The current then rushes through them like a millrace, tearing away the land on either bank. Such was the strain of the floods in 1887 that these channels were unable to discharge the water as fast as it was delivered, the lagoon rose to an unprecedented extent, and burst through the land at Kutonu, where, for nearly a year, it continued to pour its waters into the Atlantic through a wide and dangerous passage. Just as our French neighbours were congratulating themselves on having secured a rival to Lagos bar, which is at present the only navigable inlet on five hundred miles of coast, the sea built up the mouth once more, and things returned to their normal condition. A native tradition—according to which seven men were many years ago carried out to sea by a similar outburst of the waters of the lagoon—points to a previous occurrence of this kind. Six of these men were drowned, and the creek was named Kutonu, or the "water of death," in consequence.

From the Denham Waters to the Porto Novo Lagoon run the two narrow channels which have already been mentioned. The current sets very rapidly through them at all times, and on them alone depends the discharge of the accumulated waters of the lagoon.

I have been the more detailed in describing these waters from the fact that they may be taken as a fair sample of the process followed along the whole line of coast. We have here a large lake of very shallow water, rapidly silting up under the influence of a continual discharge of sediment from a considerable river. As it silts up, the river defines its course, and runs in a marked and little-changing channel, which becomes more distinct every year as the rest of the lagoon becomes shallower

This channel, strange to say, runs parallel to the coast. The waters of these rivers (for there are many of them) seem to use every endeavour to avoid being forced to flow into the sea. They put it off as long as possible, and one cannot deny that they are wonderfully successful in their endeavours. The large tongue of land between the Denham Waters and the Porto Novo Lagoon, into which the Opara river flows, may be said to be a result of this silting-up process. It is, in short, the delta of the Opara. Between the Porto Novo Lagoon and the coast lie many hollow places, which also run parallel to the sea, and are swamps in the dry weather and deep in water during the rains. These are remains of old connecting channels, which have in their turn become silted up. I have, for this reason, marked them in a different shade of blue, in order to distinguish them from the permanent waters of the lagoons and channels.

From the Opara river to Lagos, a distance of over sixty miles by river, there is a continuous channel of running water, which receives, near Badagry, the volume of the Addo river, a very considerable stream, which comes from the Yoruba uplands. It is navigable for many miles in steam launches, and will eventually become an important trade route to the markets of the interior. A depot market will shortly be founded at a place called Ajilete, near Okeodan.

In the Addo river one sees, in perhaps greater perfection than elsewhere, the immense growths of floating vegetation. For many miles the river flows entirely beneath a floating sod, composed of grass and papyrus. Though its current is nearly half a mile in width, and from sixteen to twenty feet deep, the only portion visible is a narrow canal through the overhanging grass, which is kept clear by the natives for their canoe traffic. I wish to draw your special attention to this fact, as it will be seen that these floating papyrus islands are one of the chief agents in the formation of land in this part of the world. The banks of all the waterways are lined, often for two or three miles in depth, with floating masses of vegetation on which it is possible to walk. These form pads, which protect the land from the scour of the current. Wherever there is an eddy or slackening in the current, one sees the floating cups of the duckweed slowly accumulating. In this accumulated mass of duckweed (*Pistia stratiotes*) there shortly appear a few stalks of floating grass, which rapidly bind the duckweed together into a coherent mass, and growing with great rapidity make a suitable bed for the papyrus, which sends its rope-like roots abroad in all directions, and lashes together the floating island into a solid sod some three feet thick, through which a channel has to be cut with an axe. A few miles of water are rapidly covered in this way, and by the end of the dry season the rivers are one and all flowing under a dense covering of papyrus and grass. When the floods come suddenly down from the hills in the interior this covering is torn away in masses varying from a few yards to over an acre in extent and rapidly carried towards the sea. I have from my house at Badagry counted twenty-three of these grass islands floating past at the rate of about four miles an hour before breakfast. When one considers that this procession goes on day and night for several weeks every year, one sees the enormous accumulation of these islands which must take place somewhere. As a matter of fact, they are rapidly distributed along the banks of the main waterways, which run parallel with the coast, when they become permanent, and are further solidified by the boucan tree, a species of wild water fig, probably the origin of the word boucan (buccaneers) in the West Indies, the wood of which is still used for smoking meat by the natives of West Africa. By long-continued mooring at one place these islands become bound together by groves of these boucan trees until they rot and sink, and accumulate to such an extent as to choke up the waterways and produce the lateral swamps which are marked on the map. In these swamps flourish the *Raphia vinifera*, or palm wine palm, the basket tie-tie, a climbing prickly palm common to the tropics of America and Africa, and many other less useful trees.

Such of these islands as escape from the mesh of waterways which lead towards Lagos, accumulate near the bar, and continue their good work of land-making, though disturbed by the nearness of the thundering surf and salt spray, for they cannot grow in salt water.

As one nears the bar at Lagos the boucan gives place to the mangrove and the coco-plum (*Chrysobalanus icaco*—also common in the West Indies), the beautiful water lilies (*Nymphæa*) of the upper waters vanish, and melancholy mangrove roots hang into the water on all sides.

Passing Lagos towards Benin we find the Ogun, Oshun, and the Oni rivers debouching into the lagoon. The current flows to the westward instead of towards the east, the boucan is replaced by the mangrove, and there is a marked absence of papyrus. There is little doubt that the influence of the Niger begins to be felt. It is probable that the water in this direction is more hemmed in by dense forest, which overshadows the water, and prevents the growth of grass. This is doubtless due to the greater fertility of the mud which comes from the Niger basin. Indeed, one sees at Abegamura, where the coast trends towards the south, that the beautiful golden sand of the coastline is replaced by Niger mud—black, fetid, and unhealthy.

I have rapidly sketched the chief characteristics of these waterways. As at present existing, there may be said to be a total of 465 square miles of water lying within fifteen miles of

250 miles of coast. Of this 216 is stagnant—in the form of lagoons—and 246 is running with a current varying from two to four knots an hour, through channels varying from a few hundred yards to two miles in width. The total length of these intricate passages it is impossible to give. A glance at the map will show how tortuous and manifold they are. In Schweinfurth's celebrated work on the "Heart of Africa," vol. I., p. 106, will be found a picture of the Papyrus Islands of the Upper Nile, which exactly represents the appearance of the western portion of these waters.

In the 500 miles of coast-line, from the Volta to the Benin, there is, as I have already said, but one break of any importance, but one natural harbour, where the accumulated inland waters escape into the sea. This is the outlet known as Lagos Bar, where, through a narrow channel not many hundred yards across, this great mass of water pours into the Atlantic from east and west, from the Niger and the western lagoons. Over this bar steamers drawing thirteen feet of water can safely pass, while inside the harbour vessels drawing 26 feet can moor alongside the piers. There is, unfortunately, not sufficient depth at the entrance to make the magnificent port of Lagos "The Liverpool of West Africa," available to large ocean-going steamers. It is probable, however, from consideration of the rapid currents of these inland waters, and the slight check which they receive from the small difference in tidal rise of the open ocean, that works on the model of the Mississippi improvement scheme would, by concentrating the stream upon the bar, deepen the passage to allow of free entrance and exit to all vessels. It is, I believe, under consideration to take the advice of a competent engineer upon this question.

In no other part of the world is there so marvellous a delta formation as that which I have described. Brimful and rapidly flowing as these waters are, they are yet retained for hundreds of miles by narrow strips of shifting sand. I know of nothing so astonishing, unless it be the approach up the Mississippi to New Orleans, where for many miles the spray from the western portion of the Gulf of Mexico is carried by the wind across the rapid current of the river, to mingle with the waves upon the other side, where, from a steamer's deck, you can see the white sails of the fishing boats in the ocean on either hand, where a few hundred yards of grass and sand separate the channel of the greatest river in the world from the breakers of the open sea.

We all know how Major Eades attained this wonderful result; how, by planting rushes and grass, and driving piles into the banks, he confined the river into a narrow channel and forced it to dredge its own passage, thereby increasing the depth of water on the bar from eleven to twenty-five feet. Had he visited West Africa he would have seen Nature at work in the same way, cooping up the waters of many considerable rivers in a narrow channel running parallel to the shore for hundreds of miles, and often separated by a few yards only of shifting sand from the tremendous Atlantic rollers which continually pour in upon the African coast. How is it possible that these great engines of destruction should unceasingly be battering against this narrow strip of sand in vain? The noise and fury of their attack is heard for miles inland; the coast line is blotted out by a continually rising cloud of foam and spray; the force of their onset is such as to tear down the beach, leaving, after a storm, a perpendicular wall of crumbling sand, and yet never once within the memory of man has the sea broken through into the lagoons. I shall endeavour to explain this wonderful phenomenon, and it will, I think, appear from full consideration of the facts, that such astounding results have been attained by the most simple of Nature's means.

In the first place we must bear in mind that the force of the tide on these open shores is very much less than in the narrow British waters, though the power of each individual wave is immensely greater. The extreme difference of spring tides does not exceed three feet, as compared with fourteen or eighteen feet on many parts of the English coast, and forty feet in the Bristol Channel at the mouth of the Severn. The reason of this slight tidal rise and fall is, of course, the openness of the coast, which prevents the banking up of tidal waters which takes place in narrow seas. In the Bay of Fundy, for example, the extreme tidal difference amounts to no less than seventy feet. As a destroying agent tide counts for much more than waves. Tide gives impetus to the waves, and enables them to attack at a greater distance, and to drag further away the fragments of the resisting shore which they overpower.

Again, there is nothing more surprising on the African coast of which I am speaking than the absence of violent storms. Hurricanes are unknown, and the worst West African "tornado," as they are somewhat imaginatively named, is to the ordinary West Indian hurricane as the strength of a child to the power of a strong man. When I mention the fact that the Bristol vessels anchor off the coast in unprotected roadsteads for three years at a time, for trading purposes, without dragging an anchor or snapping a cable, you will readily understand that there can be no great force in the worst winds that blow in this land of fair weather.

In addition to the above considerations, there is the fact that for nine months of the year a steady breeze blows from the south-west towards the inland hills and the Sahara at an angle to the coast of about 45°. By this unceasing wind is produced, or at least assisted, a strong current, which sets in towards the Niger from the westward. This current is known as the Guinea Current.

It runs parallel to the coast, and varies in rapidity according to the strength of the wind which drives it. At times of high winds, a cork or stick flung into the sea is carried to the eastward as rapidly as a man can walk. This current sweeps along the whole coast from Cape Palmas to the Niger, tearing away the sand from the rocky shores of the Gold Coast and distributing it along the line of the more protected Bight of Benin. Thus we see that the accumulation of sand in the Bight is not the gift of the Niger so much as of the more westerly shores of the continent. With such strength does this current run, that the breakers strike the shore at an angle, making, at times of high winds, undulations in the sand equal in width to the breadth of the waves. These gigantic ripple marks are often nearly at right angles to the coast-line, and measure from fifty to seventy feet in width from ridge to ridge. Its scouring force is such at times as to undermine the shore for many miles, leaving a sheer wall of sand from four to six feet high at high-water mark. These miniature cliffs of soft sand are smoothed away as soon as the calm weather lessens the force of the current; but throughout their whole length the shores of the Bight of Benin are steep, narrow, and constantly changing in shape, the fact being that, as fast as the waves and current carry away the sand towards the Niger, fresh supplies take its place from further up the coast. Thus the wearing away of the shore in any given place is constantly made good by fresh supplies; and as the drift of sand from the westward is greater than the amount carried eastward, the narrow strip of land which separates the Atlantic Ocean from the inland waterways not only resists the onslaught of tide, waves, and current, but tends always to increase in width, solidity, and strength.

From consideration of these facts it is easy to explain the astonishing endurance of the narrow belt which separates the inland waters from the sea. It has been seen that this result is produced by very simple means. There is, I believe, an equally simple explanation of the manner in which this lagoon system has been so shut in from the sea. At first sight it seems a most extraordinary freak of Nature. Why should not these rivers—the Zunu, the Opara, the Addo, the Ogun, the Oshun, the Oni, and others equally insignificant compared with their big brother the Niger—be contented to flow into the sea each in its own way, over its own bar, at the end of its own valley? Why, after flowing for many miles through hills and between well-defined banks, should they turn with one accord into a channel at right angles to their courses, running parallel to the sea for many hundreds of miles, and only separated from its waves by a narrow belt of sand?

Given the above conditions of tide, current, and wind, and the peculiar character of the rivers in this part of the world, as already described, we will consider the case of one of them, the Addo river, which debouches into the Victoria Lagoon near Badagry. At Memfo, some fifteen miles in a straight line from the sea, the river flows past the foot of a bluff a hundred feet in height. Higher up, at Okeodan, a day's journey by canoe from its mouth, it has the usual characteristics of a tropical river. There is nothing to lead one to believe that it will so suddenly alter its course, and issue, as it does, over a shallow bar into a broad river-like lagoon, flowing at right angles to its course instead of into the sea which lies so near its mouth.

Let us consider the coast as stripped of this delta formation. From Cape Three Points it would trend sharply to the north-east as far as the foot of the Dahomian highlands. The bluffs of Porto Novo and Memfo would in all probability exist as shelving islands indicating a zone of previous elevation. From thence it would run east and west at a distance of fifteen to thirty miles from the coast as far as the Benin river, where the true delta of the Niger commences. We have thus an ancient sea margin some thirty miles north of the present coast. That the increase to the coast is not greater is probably due to the fact that it only commenced in earnest when the elevation of the land ceased. Otherwise one would expect to find it level with Cape Three Points, the buttress behind which the Guinea current has so laboriously accumulated its stores of sand.

We will consider the Addo river as flowing into the sea at the end of its course among the uplands. Its current would strike the shore at right angles, and if met by no current of the ocean would tend to make a delta at right angles to the shore, similar to that of the Mississippi; for the delta of the Mississippi follows the direction of the prevailing northerly winds which blow from the Rocky Mountains and the Artic circle across the American continent. The Addo river being a river of comparatively short course is able to deliver its burden of sand in the rough state. A river like the Niger or the Mississippi has to grind its sand into fine mud before it is able to deliver it to the sea. Fine mud means mangroves and fertile land. Rough sand means scrubby brush and open waters suitable to papyrus and unsuitable to mangrove. Vast quantities of papyrus islands would continually float down and as continually tend to consolidate the delta formed by the river. This delta would gradually acquire a bias away from the prevailing current and wind, and this bias would be rapidly increased by the accumulation of drift sand carried by the Guinea current, and heaped up on the outside of the delta. We have thus a delta forming which is continually padded by grass islands on the river side, and heaped up with sand on the sea side. As it grew more solid the right bank of the river would tend to seek the direction of the prevailing current, and having strength to resist the onslaught of the waves in the manner already described, would consequently follow the direction of the coast parallel to which the current flows. The left hand being weaker than the right hand, owing to the absence of the tribute of sea sand supplied to the right bank, would be less and less marked, and would eventually become identified with the old sea-beach, thus forming a lagoon proportionate in width to the strength of the current of the river which supplied it.

This lagoon or wide river mouth would continue its formation until another river was met with, undergoing a similar process of formation. When the mouth became silted up against the right-hand bank of the terminal lagoon of the next river, until it grew very narrow, an unusually heavy flood would cause it to break through into the next lagoon, and the original mouth would be completely closed and silted up. There is little doubt that in this way the Zunu has broken through into the Opara, the Opara into the Addo, and the Addo into the Ogun. In all probability, indeed, this course was continued by the Ogun breaking into the Oshun and the Oshun into the Oni rivers, and the Oni into the Benin. As the Niger pushed itself out into the Gulf of Guinea it absorbed the Benin into its delta, and deflected a considerable portion of its flood water into that river. The Benin river, being reinforced by the Niger, proved to be too strong for the other and smaller rivers, and being unable to deliver all its water through its own mouth, caused a conflicting current to flow back to the westward to meet the current from the Zunu, Opara, and Addo. Where the weight of these contrary currents became balanced was a large lagoon receiving the Ogun river, and after a flood of unusual severity the sea wall of drifted sand was overcome and a new river mouth was formed at Lagos. Being eased of its glut of water the Benin ceased to have much difficulty in discharging itself over its bar, and any superfluous flood water from the Niger is now drained off through the eastern waters of the colony of Lagos over the Lagos bar. As in course of time the Niger delta is pushed further out there is little reason to doubt that the new parallel lagoon which will by that time have been formed by the Lagos river will be in its turn absorbed by the Niger, and will from one of its numerous mouths at some part of its course not far from the Benin river. It is to be noticed that there already exists a tendency on the part of the right hand of the Lagos channel, though only a mile or two in length, to overlap the left bank, which has been rapidly carried away by the easterly trend of the river at its mouth. Captain Hammond—the manager of the Lagos Warehouse and Commission Company—once pointed out to me a spot, some half-a-mile out at sea, where, no longer than five years ago, he used to have picnics under the palm trees which then grew there. A corresponding growth outwards of the right-hand bank has taken place, and there is no doubt that, within a measurable distance of time from the present date the land will have overlapped, and the mouth of the Lagos river, now known as the Lagos bar, will point in an easterly direction. You will readily admit from the above considerations that there is no more astonishing delta formation in the world than that of these so-called lagoons of the Bight of Benin. Of the more remote possibility of the lagoons and waterways which have formed under the shelter of Cape Palmas eventually passing the rocky shores of the Gold Coast and joining the more easterly system it is not necessary to speak. In all probability Cape Three Points is not sufficiently sheltered by Cape Palmas to allow this.

If it is asked what interest these waterways in an admittedly fatal climate, other than a purely scientific interest, can have for us, there is a very ready method of supplying a satisfactory answer. In 1862, when we took over the notorious slave station of Lagos, the total trade amounted to £139,866. Palm oil was then worth £52 per ton. Other trade but palm oil and slaves there was none. With palm oil at less than half that price, and kernels lower than they have ever been, we have increased the trade to close upon a million sterling per annum. Every gallon of oil and every pound of kernels is brought to Lagos by canoes and steamers along these waterways. On the Gold Coast they cannot possibly compete with us, owing to the fact that the produce has to be brought for long distances overland. The waterways of Lagos intersect in every direction the palm forests which flourish best in close proximity to the water. Their mangrove and boucan forests give an inexhaustible supply of wood for boiling the palm nuts, from the pericarp of which the oil is produced, and by this means we are able to supply a better article than the natives of the Gold Coast, who are obliged to subject their palm nuts to a preliminary process of fermentation, which damages the produce to the extent of several pounds sterling per ton. It is on these waterways that our trade with Lagos entirely depends, and the gigantic steps which have been taken of late years are entirely due to the unrivalled facilities for communication offered by this wonderful system of rivers and lagoons. With the introduction of the cultivation of Egyptian cotton, of fibre plants, and the more thorough exploiting of the natural resources of the country, in the shape of cocoa-nuts, indiarubber, kola-nuts—now so largely used in the manufacture of beer—Liberian coffee, and other plants, we may look to a still greater development of trade during the next few years. Under the management of an enlightened system of government we are acquiring all these advantages, and may hope in a short time to be putting really good cotton on the market as well as *furcraea, sansivieria,* and other well-known fibres. The cocoa-nut industry is being carefully fostered by the Government, which has plantations of 50,000 trees in preparation as an example to the natives, and should, in a few years, be a considerable source of profit. Upwards of 30,000 coffee, kola, indiarubber, and other plants were distributed last year by the botanic stations of the colony among the natives, and this amount ought to be more than doubled during the coming year. These plants are sold to the natives at a nominal rate, and are eagerly purchased. A similar course will be adopted with Egyptian cotton and other plants. As the rich soil on the shores of these lagoons and rivers becomes more fully cultivated, the export of more varied articles of commerce will cause a rapid increase of our trade. In the meanwhile the enlightened policy of the Government at home has extended the sphere of our influence as far back as the Niger, so that we may look for an extended market with the interior tribes along the upper reaches of the rivers which I have mentioned. As we hope to have abandoned our short-sighted commercial policy of relying upon one staple product, which has been cleverly described as "the eggs-in-one-basket policy," so we have at last condescended to accept the repeated offers of the natives, and to put on one side the equally short-sighted "sand-strip" policy which has hitherto confined us to the unhealthy neighbourhood of the lagoons and swamps of the slave coast. In both of these new departures we depend upon our means of rapid and easy communication for the steady development of our trade and influence with the natives. This is supplied in an unrivalled degree by the rivers and so-called "lagoons" of the Bight of Benin.

Experiments with Economic Plants in Malacca.—Some interesting information is contained in a Report (No. 65) recently issued from the Foreign Office, as to the results of experiments with economic plants made by the Forest Department in Malacca. We extract the following: Mauritius hemp (*Fourcroya gigantea*) grows slowly, but well; some fibre has been prepared from a few old plants and has the appearance of good fibre. If kept free from weeds, nothing further appears to be required to insure success. Virginian tobacco—a fine lot of plants were raised from seeds received from Kew, but from seeds saved locally the plants deteriorated so much that cultivation has been discontinued; experiments with Deli tobacco were also unsuccessful. Castor-oil seeds were obtained from the Botanic Gardens at Calcutta, and the plants have grown vigorously and commenced to fruit. Croton oil grows freely and fruits abundantly. Annatto (*Bixa orellana*) grows vigorously and is deserving of trial on a large scale. Black pepper grows well, and might be more extensively cultivated to advantage. The cultivation of pepper was, in the early days of the settlement, one of the chief industries of the country; it is now being taken up again to a considerable extent. Cubebs (*Piper cubeba*) promise well, and are being propagated as largely as possible. Maltese oranges and lemons have grown well. Mahogany (*Swietenia mahogani*) seeds were received from Kew in 1886; the plants have flourished and are ten feet high this year. Unfortunately few are free from the ravages of ants. Two species of eucalypti have grown with remarkable vigour. The average annual rainfall of the district is 74 inches.—*Proceedings Royal Geographical Society.*

LAKE NYASSA AND CENTRAL AFRICA.

By Capt. F. L. LUGARD.

[Read to the Members, in the Memorial Hall, Wednesday, October 16th, 1889.]

I have been asked to read before you a paper on Lake Nyassa, but knowing how many abler pens than mine have already essayed the task, it is with reluctance that I make the attempt, though I much appreciate the honour done me by the request.

I conclude that all who have an interest in their fellow-countrymen, who have for years (and with the most splendid results) been endeavouring to do good to this country, have already read what has recently been written on the subject. Were I then to reiterate my plea for those of my comrades on the lake whom I left at Karonga's, stemming the tide of the slave trader's aggression, I should but be repeating the story which I considered it my duty to tell in the September number of the *Contemporary Review*. On the other hand, if I dwell on the commercial possibilities of the country, I only echo my words of a few weeks ago, when I had the honour of reading a paper on this subject before the Geographical Section of the British Association at Newcastle. I then, as fully as I was able, discussed the products and capabilities of Nyassaland, and argued its advantages and disadvantages as a country for emigration both for Europeans and natives of British India. The subject was to me a pleasant one, for I believe in the capabilities of the country; but in deference to the scope of the subject on which I was asked to write, I denied myself the latitude in description and general detail, the introduction of which, in the most charming of language, made the paper read by Captain Hore supremely fascinating to all who heard it.

Let me then attempt to describe to you now what sort of a place this Lake Nyassa is, and what sort of people live there. We will travel there together in imagination for a brief half hour. Hurriedly we pass over the four or five days' boat journey up the Kwakwa river, from our startling point on the coast at Kilimane. This is not a time "to memory dear," yet it has its fascinations. The trees on either bank drooping into the silent river, great limbed acacias with their feathery foliage and sweet-scented yellow blossoms, and large fig trees festooned with giant creepers—the glorious (though perhaps for you too powerful) sunshine, the cheery and incessant boatman's song as they dip their paddles simultaneously to the cadence—the lovely tinted reed warblers and gay butterflies—and soaring above all the great fish eagle with his weird cry, more weird and striking even than the lion's roar—all these are new to us and charm us. But as evening falls the curse of the Kwakwa, the myriads and myriads of mosquitos, come forth like a misty army athirst for blood, and we are only too glad to light a fire of green wood, and sit in the blinding smoke, though it draws involuntary tears from our eyes, to escape the smarting pain of their venomous bites. The night is a weary one, for no mosquito net seems proof on the Kwakwa, and in our very dreams we wonder what human fiends the Bhuddist creed condemns to be transmuted after death to mosquitoes!

The indispensable morning dip is hazardous, for the river is full of crocodiles. So we reach the end of the Kwakwa, where we must transfer ourselves and effects across to the Zambesi, a porterage of four miles. It is a noble river, perhaps three quarters of a mile wide here. We are still in the fever zone, and shall be till we leave the river. Almost opposite is the mighty baobab tree, under which lies Livingstone's wife. Other graves around testify to the fatal malaria of the place. The fever is bad enough. I will not inflict on you a description, which would perhaps be worse! Soon we branch off to our right to ascend the Shiré, a broad, fine river, running into the Zambesi, and push on through the Morambala marshes, with the great mountain looming in front and on our right; and if you have not already experienced an attack of fever, I can promise it to you here. As we wind in and out along the dead flat country, the Morambala mountain assumes new shapes, and is now on our right, now on our left, and anon almost behind us, so interminable are the windings of the river, but it seems to get no nearer. Islands of water cabbage and vegetable debris of all kinds float past us, and so we reach and pass through the Elephant marshes.

Doubtless, in no very distant past, all this country was a shallow lake, over which the great Morambala kept silent watch, in the times when these dreary swamps knew not the sound of the white man's rifle. Many, indeed, believe that the ancient Portuguese discoveries of a great lake, with a mountain rising out of it, referred to these swamps, then flooded, and not to the real Nyassa, as now alleged. So we reach the Makololo chief, Inlanri. A quaint old man, and a fine-looking old chief he is. He will talk to you only in English; for it is the boast of his life that he was Dr. Livingstone's private servant, and followed him here from far-off lands in the far interior. His English, however, is altogether unique, and to us was unintelligible. He has ever been our loyal friend, but they say that the Portuguese have lately been telling him it is due to the English that powder and guns have been stopped. He is a keen elephant hunter, and the result is that (persuaded the Portuguese will give him arms) he is beginning to waver in his loyalty to us, and lately the little steamer on the river was fired on almost opposite his village.

Next day we are at the end of our first river voyage. A weary climb for thirty miles up gradients which Highlanders may think trifles (for we are among Scotchmen now), but which an average man is glad to see below and behind him—and we are at Mandala and Blantyre, on the Shiré highlands. We are to journey on the lake, but you must halt here a moment or you would outrage the generous Scotch hospitality, besides, there is only one Blantyre in Africa, and nothing like it anywhere else. Savage Africa lies all around, but passing up the long avenue of blue eucalypti, we find ourselves in an oasis of civilisation, the more striking and complete from the contrast. Well-built and neatly-thatched houses, of solid brick, enclosing a square, beautifully kept in shrubs and flowers, all watered by a highly-skilled system of irrigation channels—bringing water from a distant brook, gives a British, homely charm to the picture, and disarm surprise when we find well-stocked kitchen gardens, carpenters' shops, brickmaking and laundry establishments, all around us. The mission children are dressed in spotlessly-white clean clothes, and look bright and happy. It is a mission under peculiar circumstances. It is not, like most stations, situated in the midst of filthy and arrogant tribes, who, while dreading and respecting the superiority of the white men, are yet fully cognisant of their own brute force. Few villages lie even near it, and over most of these the head of the mission exercises a right of arbitration and rough jurisdiction. The children are not haphazard comers—here to-day and absent by some whim to-morrow—but boarders; many coming from far, the sons of chiefs and head men. Over this little model colony preside the *genii loci*, the Rev. Clement Scott and his wife, and I know not which exercises the greater influence for good. This influence is extraordinary, for no one more quickly discerns the real *gentleman* than the African savage.

It is a tempting spot to linger in, either in fact or on paper. I would like to write you a much fuller account of the Shiré highlands, of the very pretty church, so pretentious in its architectural beauty, owing to the talent of Mr. Scott, as to have gained the sobriquet of the Blantyre Cathedral—of Dr. Bowie and his work—of Mandala and Mr. Morris's thousand experiments with dogs, goats, horses, poultry, &c.—of the coffee plantations, and of Messrs. Buchanan's sugar, coffee, &c., at Lomba; but we must push on to Nyassa, and I must refer you to Mr. Buchanan's interesting book.

After the first mile or two it is a gentle, almost imperceptible slope which takes us to the Shiré again, above the cataracts. Beautifully-tinted gladioli, and a thousand lovely flowers and flowering shrubs are around us on our way to Matope, the Lake Company's depot, in the upper river. Hence we ascend the river again, by the little steamer the Ilala—whose history is a chapter of African romance itself—or by open boat, according to the time of year and the amount of water in the river. As we near the south end of the lake, on our left lies village after village, some of hugh size and densely populated. This is Inpondás, a semi-Arab chief, wholly under Arab influence. The river is narrow here and his guns command the entrance to the lake. It is the point of the greatest strategic importance in this part of Africa. For years, friendly relations have been maintained between the British and him; nothing would have been easier than to make a fair and advantageous treaty with him. We had no rivals. No other nationality had ever come so far, except a fortuitous explorer or two. Twelve months ago, those interested in the good of this land, urged by all means in their power that steps should now be taken to establish their rights here—their voice was a voice crying in the desert. The result they foresaw has recently happened.

The Portuguese—who, whatever they may have done in prehistoric periods of African exploration, were unable in modern times to penetrate to these parts, so great was the dislike to them and their ways by Inlanri and the lower river chiefs—have taken advantage of the peaceable relations established by the British, and of the prohibition to the import of arms which allowed them to equip expeditions and prevent others importing an ounce of powder, and pushing their way up (about last January), have presented their inevitable flag to Imponda, and washed down the dose by the present of an Express rifle, and other goods—regardless of the fact that the gift of arms to natives and Arabs was contrary to the terms of their compact with the blockading powers. So now they have a treaty, and a piece of land in possession, and claim a right to the south of the lake. Imponda is a noted slaver, and with the Portuguese will come the introduction of spirits, hitherto rigorously prohibited by our missionaries and traders, and I fear lest the good results of years of patient work will be lost. Should these claims be acknowledged by England it would be useless for traders to attempt to work at the north of the lake, when the whole waterway of the Shiré and Zambesi, and the entrance to the lake, is in the hands of a rival power, who, hitherto, has not shown herself friendly.

Already we are twelve months too late, but all is not lost yet. Will not the British public interest themselves for those who have for years done so much for the good of this country? Will not those who admire the unpretending heroism of lives devoted for a long series of years to the establishment of missions and the culture of the people raise a voice on their behalf? Are there those to whom this does not appeal? Will they then see substantial British claims to a fertile country offering a market for our manufactures and promising to yield very important products in return—among which we now know gold to be included—will they allow this to lapse into the hands of a nation which has no claim beyond certain ancient and disputed documents of discovery, of the existence of which they were themselves, it appears, ignorant for a number of years, and which had lapsed through their own oversight?—a nation which has done nothing worth speaking of for her East African possessions, which levies a polltax on the wretched Negro, and gives him nothing in return, and has made neither bridge, nor road, nor rail, nor irrigation during the 300 years she boasts to have occupied certain places on the Zambesi and coast? Guns, powder, and spirits she largely imports. These do not improve the status of the natives. It is not yet too late for Britain to repudiate these claims and insist on her own undeniable claims to the Shiré highlands and the territories to the south and west of Nyassa.

Let this be my plea this evening, that you will support your countrymen in their efforts in East Central Africa. Once proclaim, with no wavering voice, our policy there—once let it be understood that we mean to stand by our rights—and companies and charters will spring up speedily to work the gold and other products of the land; and with their advent will disappear the Arab aggression and slave trade of this country, at present acknowledged to be the head-quarters of the slave traders' hunting-grounds.

Our present object is to visit Nyassa and its people, and to spend with them a more intimate half-hour than can be gained by a study of the map. The view as we steam in the little Ilala round Cape Maclear into the old mission station of Livingstonia is picturesque in the extreme. A few feet from the shore we are in blue water many fathoms deep, yet so clear that we can see the bottom, as if it were but a foot below us, and the water growths and shells, and many coloured fishes. Above and behind us tower the rugged boulders of the hill. In front of this fairy port are a series of islands standing out to sea, behind which the sunset shows with a glory that is superb as it sinks below Nyassa Lake. Much as I have travelled, I have seen, I think, no lovlier spot in my life. Clear as crystal to look at, the water of Nyassa under analysis proves to be as good as it looks. There is singularly little flotsam cast ashore by the waves, and no floating debris on the waters, spite of the large quantity of wood and vegetation borne into the lake by the rivers when in flood.

Nyassa is close on 400 miles long, with a breath varying from 15 to 60 miles. On the east, the lofty Livingstonia range of hills, some 6,000 feet high, in many parts run almost sheer down into the water. On the west the coast is rarely precipitous, and for the most part is beautifully wooded. Here and there it is rocky, and great weather-worn boulders rise like beacons out in the lake, whose waters surge round and over them with the sound of the ocean. In other reaches there is a sandy beach, where the waves roll softly in on the shore. Beyond are woods and forests or plains of grass leading to the range on range of hills which form the higher plateaux of Africa and the watershed of the lake. One or two islands are dotted here and there—some very small, others a mile or two in length—all crowned with trees and vegetation, with bright-coloured lizards and huge centipedes and other insects. One wonders how the animal and vegetable life found its way here from the mainland. The level of the lake is constantly and regularly falling year by year, and the exit by the mouth of the Shiré is gradually getting blocked by a bar of sand. Theories are various to account for this. It may be that the detrition of the rocks in the Murchison Cataracts allows a larger body of water to pass through and drain from the lake; or it may be that the rainfall has decreased in the area drained by the lake, for there are those who maintain that it does so decline during a nine years' cycle, though from what causes has not been explained. The silting up of sand at the mouth of the Shiré is harder to account for, and is apparently exactly paralleled by the phenomena described by Captain Hore and others on Lake Tanganyika. It would seem probable hat a constant decrease in rainfall has been going on for a large number of years, which would account for the drainage of the Shiré marshes and the rapid shallowing of Lake Tamalombe.

The largest Arab settlement on the west coast of the lake is Jumbe's, about S. lat. 13°. He and the east coast Arabs have several large dhows for carrying goods, especially slaves. Storms, or rather squalls, are frequent on the lake. Skirting up the west coast, we come to the mission station of Bandawé, on the lake shore, in lat. S. 12°. Dr. and Mrs. Lawes have effected wonders here. Their schools are thronged, and the practical nature of the work is invaluable. But I must not again allow myself to digress into a description of an African mission station, however tempting.

Dr. Lawes' contributions to science, and his extensive information, have made his name celebrated as the scientific referee on all Nyassa ologies. The people among whom he lives and works are the Atonga. The features of most of the men one sees are distinctly good, but each tribe has unmistakable characteristics of its own, and to detail these would prove uninteresting, even if time permitted. On the whole, they are intellectual-looking people. The forehead is high and broad, the profile good. The prognathous types of West Africa are rarely seen here. The mouth is generally large, but not excessively thick-lipped in most of the tribes. In some, indeed, the lip is thin and delicately cut. The nose is generally small and badly shaped; but many individuals, on the other hand, have well-shaped and even aquiline noses. In physique they are often very fine indeed. Some of those I remember were both tall and muscular in the extreme. They are symmetrical, and have deep chests and well-developed arms and legs. Their colour varies greatly. The prevailing tint is deep black, but often in the same tribe, and even in the same family, you may find the black and the pale chocolate colour side by side, with no apparent reason. In temperament these children of Nature are lazy and good natured. They are very excitable—driven to frenzy by the war dance and the drums and shouts which accompany it. Now ready to fight like heroes and face certain death—anon equally prone to panic and dismay. As a rule they are plucky—if that be pluck which has little conception of danger till it stares them in the face—and no stronger motive for facing death itself more weighty than the off-chance of looting your neighbour's cow. Vices and virtues are strangely mixed in these wild African savages. Falsehood and duplicity is perhaps with them rather a virtue. Generosity in sharing any good fortune, in halving the last crust—or what would correspond to that proverbial item in the African menu—is so universal and usual as not to demand notice among themselves. Almost every man, and *par excellence* every chief, is at once an inveterate beggar, and ludicrously arrogant and haughty. How, then, can I describe to you in a brief compass such a paradox of human character? In religion they believe, I am told, for the most part in the spirits of their ancestors, and in a vague "Inlungu," or unknown God, who, they apparently think, takes as little notice of them as they do of Him. Their religion makes them intensely conservative, and is thus greatly opposed to the introduction of newer or better methods. They are excessively superstitious, believing in magic and necromancy, and the efficacy of spells and charms, of witchcraft and augury. The test of the Oola and the ordeal of Inwari poison are their ultimate methods, the one for augury and the other for the detection of supposed crime and witchcraft.

Their arts are very simple. They work in iron and produce the sole agricultural implement which they have—the hoe. This and the axe are their only utensils. Both fit to the handle by a spike passing through the wood (which is made thicker, to receive it, at the point through which it passes). As in most primitive nations, all the art of embellishment and of form is spent on their weapons of war, the spear and the shield. The former vary very much in shape and design, and are often most artistic and beautifully made. Sometimes they are furnished with barbs, which make cruel wound, and are not extricable from the body. They are thrown from the hand at a short distance, with great force and accuracy, and are well balanced, and ornamented with brass and copper wire. The shield of the Angoni is a large oval, like that of their ancestors the Zulus. The Wankonde tribe carry a wooden shield, covered with skin, long and narrow, curving round like a tube, inside which the arm just fits. It is generally not more than seven or eight inches across. In wood they also do some rude ornamental work, especially in the manufacture of their pipes. Rough carvings of crocodiles and lizards appear on their benches and seats, and the long spoons are often curiously wrought. All work is done out of one block or piece. They have no knowledge of welding metals, or dove-tailing, sawing, or joining wood.

Their dwellings for the most part show little skill or design, and are beehive-shaped huts, lined with mud. The tribes at the north end of the lake, however, are a singular exception: their huts show architectural design of no mean order. They are circular, the uprights leaning outwards considerably, and composed of stout bamboos cut and notched, so as to present a curiously varied and striking effect. The interstices are filled with lumps of sunburnt clay, shaped like French rolls. The thatch is conical, high, beautifully made, and the door tolerably high and wide. The floor is raised, and the whole interior plastered smoothly, and kept scrupulously clean. The villages are embowered in huge groves of plantain trees, and the whole surroundings are a model of cleanliness. They cure skins by hand-rubbing, and use those of small animals—especially monkeys and wild cats—for tobacco bags and for dress. Those of goats, &c., are used for bags to contain flour. The skin is taken off in one piece—drawn over the head—but they have appparently no idea of combining and sewing them. Their grain is prepared first by pounding with long heavy poles, in a hollowed wooden cavity, and then ground on a flat stone with a circular one by hand. The grain is stored in large basket-shaped granaries, raised from the ground, plastered with mud and thatched. They make earthenware pots, &c., to cook their food—the hollow gourd is the drinking cup and vessel to contain water, milk, &c. In the working of the fibre they are very clever, making rope from the size of a ship's cable to that of small twine, out of the inner bark of the fig and other trees, and of plantain fibre, and plaiting the strands with great regularity and neatness. Of the plantain they also make very artistic mats of great durability in wear. Baskets are woven so closely as to be capable of containing water, and of ornamental design and shape.

The field labour is mostly left to the women—the hoeing, weeding, and reaping of the fields, and the pounding and preparing of the grain and flour. Various grains are cultivated, and a few edible roots, such as sweet potatoes, yams, and cassava. The villages of some of the tribes are stockaded. Tall poles are planted close together in the ground, sometimes in single row, sometimes two or three deep. These are lashed together with bands of reeds, and plastered with mud to the height of several feet from the ground, and festooned with thorns above. The ground in front is also frequently strewn with thorns. Often a second, and even a third, line of defence completes the fortification.

Such is a very brief sketch of these people taken as a whole. Were I to attempt to describe the specialities of the several chief tribes, either in character, physiognomy, artistic skill, or social advancement, I should very far exceed the limits of my space. I have described them as generous, brave to a certain point, not wanting in certain rude efforts at social advancement, merry, and easily pleased. What, then, for all these ages, has checked the advancement of these people, and left them centuries behind the tribes of India, of China, and of Asia? The reasons are many, and too complex to examine here. Let us content ourselves with one.

At the present day the great bar to social progress is the insecurity to life and property. The savage lives from hand to mouth. The weaker tribes care not to plant trees or build good houses, not knowing whether they and their posterity shall reap the benefit. Those still less strong dare hardly to cultivate a field, lest the enemy reap the produce. Moreover, through the length and breadth of the land, the slave trader, with his calico and presents to the powerful, and his gun, and powder, and slave stick for the weak, has for 1000 years carried desolation. Yet even more dreaded is the tyranny of the strong tribes, notably at present the Angoni and Magwangwara (of Zulu origin), who, descending like a whirlwind on an unsuspecting lage, perhaps fifty miles from their camp, with their fierce and unearthly cries, and their weird war-dress of feathers, and skins, and paint, strike terror and panic into heir victims, even before they have raised the cruel spear to slay man, woman, and child. For to these fighting tribes, and all who aspire to any independence in the and, the coming of the dry season, and the burning of the grass, is the signal anxiously awaited for going on the war-path, just as you or I might go to the sea-ide. Arabs, and Angoni, and a host of minor tyrants are then let loose over the land. Each petty tribe goes for one weaker than itself. Lever's clever couplet holds good for the poor African savage—

"Greater fleas have lesser fleas upon their legs to bite 'em;
Lesser fleas have *lesser* fleas, and so *ad infinitum!*"

If, then, we wish to benefit Africa, disregarding for the moment the benefits which may accrue to our own pocket and trade in the process, the first step is to introduce some settled law and order. The establishment of each mission station has been singularly productive of this result. At Blantyre, the southern Angoni raids were turned aside, and expended their force elsewhere, at the earnest mediation of Mr. Scott. At Bandawé the Atonga have been free from the same enemy for years past, solely on account of Dr. Lawes' influence, and the promise he had won from Mombera, a promise that chief respected with Zulu fidelity, spite of the urgent remonstrances of his councillors. If any encouragement were given to British efforts in Nyassaland, and the influential promoters of the company, who lately sought for a royal charter, were supported in their plans, capital would come into the country, and the responsibility of maintaining peace and order would devolve upon those who have put forward these proposals.

But our Government must be firm in its opposition to German and Portuguese claims—in a country where neither of these nations has any right—either by exploration, residence, or discovery, to warrant its claim to be the suzerain power. All we ask is that this land, so long the sphere of heroic missionary effort, shall be declared to be beyond the sphere of influence of any nation but England. There will be no lack then of pioneers to open it up, and establish a police force which shall restrain the lawless tribes within their own territories. As regards the other element of discord—the Arab slave-trader—it is to Western civilisation that he owes the weapons which have made him so dreaded a power in the land. His is an influence for evil, which works by subtle means, sowing dissension between tribes—throwing oil on the angry flames of savage arrogance and impetuosity. Thus he foments war, and reaps the benefits by securing, for a small consideration of calico, the women and boys captured by the victors. This curse has overshadowed the land for one thousand years. On the north, the south, the east, and the west light is now breaking in on the Dark Continent, and Britain is the foremost, as ever, in the task. It is almost the last of the great unknown lands, and it has fallen to our country and ourselves to open up the vast area of this huge continent—between one-fourth and one-fifth of the superficial area of land in our planet. To me it seems a great matter and a great opportunity. Shall posterity look back with scorn on opportunities wasted, on duties shirked, on empire and commercial extension thrust into our hands and thrown aside by us for our rivals to take? Love of adventure and daring still live in the British race. We look back on the records of the Elizabethan age, and, as boys, we sighed for those times of mighty sea-kings, of golden El Dorados in America, Mexico, Peru, and California, of Indian pagodas, and of fabulous isles of the sea; and around us to-day the same dream is enacting, the same opportunities offer, and we heed them not. There is ample evidence that these lands yield gold and other lucrative metals. Their vegetable and animal products are rich. The country is not burdened with an over-population, as was India; and, beyond all, the moral duty devolves on us of supporting the men we have allowed to go and work in these countries, of checking this scandal to civilisation—the slave trade—which can only be put down by an era of law and order wielded by an all-potential power. But we are careless alike of the higher duties and of national ambition and commercial profit—careless of the

> "Ill-used race of men that plough the soil,
> Sow the seed, and reap the harvest of enduring toil,
> Storing yearly little dues of wheat and wine and oil,"

till they perish. What matters it to us? What have we to do with those whose lives are spent to help these people? While we

> "Sit in silence, looking over wasted lands,
> Plague and famine, fire and earthquake, sinking ships, and praying hands,"

others are pushing forward, as I have already pointed out, with regard to recent Portuguese action.

Viewed from the point of view of our obligations to our Indian Empire, the opening up of a country like Nyassaland for Indian emigration would be the first and most important good we could confer on the African savage. At present he has no utensil except the hoe. The adaptation of the bullock to agriculture, the crude Indian plough, the introduction of a rough irrigation system, the field well, and the oil press, of certain Indian cereals, of many food and timber trees, of the cotton plant, linseed, flax and grain—all these are just adapted to the climate and the low stage of social development of the people. With these would come the money currency—supplanting savage barter—and rudimentary education in counting and writing, already spreading widely under mission influence and teaching.

Already I have occupied too much of your time. One word on a separate subject and I have done. On S. lat. 10°, close to the northern end of lake Nyassa, and on its western shore, is a little station named Karonga. The slavers found it a thorn in the side, and endeavoured to destroy it, and its brave defenders. Of this defence you have already heard. The Rev. L. Scott, of Denton, near Manchester, was one of the gallant six who held the place in the face of almost certain death, though escape was easy at first. His brother-in-law, Consul O'Neill, R.N., was the leading spirit in the little stockade. These men were the heroes, not I, as some have erroneously supposed. I joined them later, and helped them all I could. We had again and again given these slavers terribly severe lessons, and when I left they were in great straits. I went to make further arrangements, but was summoned home by telegraph at the wish of the directors of the Lakes Company. The little garrison then consisted of six men only, all sick. I hope and trust that the reinforcements I arranged for have by this time reached them. But I hear from various sources that someone has been sent to make peace at any price. This of course would be most easy to effect if the Arabs are allowed their own terms, viz., to remain in extremely strong stockades, commanding the road to Tanganyika, and with a free hand to continue their raids for slaves on our friends and allies, the Wakonde, who saved our garrison from massacre, and to gain the prestige they would acquire from having beaten the British, for this is in truth how such a peace would be constructed by all the tribes. For my own part I fully believe that at the time I left they would have been glad to have come to terms satisfactory to ourselves—had we had the means of proposing them—so heavily had they suffered. The questions I would ask of you, as a most influential Society, and of the Manchester people, are these :—

Are our efforts to be nullified? Is the blood shed, British blood, the constant sickness faced uncomplainingly, the very rough time that the little garrison experienced, is all this to count for nothing? The question is a simple one. We wish to know whether this country, discovered by Livingstone, opened up by our missionaries and traders, and held against Arab aggression by British pluck, and at the loss of several brave lives, is to be ceded to Germany or Portugal, and the access to it cut off by preposterous concessions to the latter power? If this is to be so let the brave men still holding out against sickness, and under very trying circumstances, at Karonga, know the verdict of their countrymen, and let Germany or Portugal fight their own battles or leave them. Our good faith to our allies will be broken, an impetus will be given to the slavers which many years will not win back again, but it will *not* be the fault of the Karonga garrison. I have used every effort unavailingly. I ask you to demand a reply to these questions.

Eastern Africa, A Map of Part of, prepared by authority of the Imperial British East Africa Company, by E. G. Ravenstein, F.R.G.S. Scale, 1 : 500,000. Nine sheets. *London: Printed and published for the Imperial British East Africa Company by George Philip and Son, 1889. Price 12s.* The Imperial British East Africa Company could place the preparation of a map of her territory in no better hands than in those of Mr. E. G. Ravenstein. All friends of the Company and of the development of British enterprise in East Africa will welcome this important publication. Mr. Ravenstein has chosen for this compilation twice the scale of his well-known map of Eastern Equatorial Africa, 1: 500,000, so as to include a much greater amount of detail. He has not only made use of the maps of the most recent travellers, but also the important notes of their descriptions, which makes the map a still more reliable one. Three inset maps are given. Sheet 3 contains a very detailed drawing of the region of the Kilima-Njaro; sheet 9 gives a plan of Mombasa—both are drawn on twice the scale of the map itself, 1 : 250,000. The third inset map is given on sheet 7, and indicates the region north of Victoria Nyanza and west of the Nile, on the scale, 1 :1,500,000.—*The Scottish Geographical Magazine.*

The Dissolution of the "Afrikanische Gesellschaft in Deutschland."—It is announced in the current number of Petermann's *Mitteilungen* that the German African Society, which has been in active operation for the last fifteen years, has now ceased to exist. Since the German Government decided to apply the sums voted by the Reichstag to the scientific exploration of the German protectorate, and to carry out the task itself, the society could no longer find the means for equipping independent expeditions. That its share in the work of opening up Equatorial Africa has been considerable is shown by the following summary of its many successful operations: The first accurate survey of the Loango coast, Dr. Lenz's expedition up the Ogowé, the complete opening up of the South Congo basin by Pogge, Schütt, Buchner, Wissmann, Kund, Tappenbeck, Wolf, and Büttner; the crossing of the Sahara to Timbuktu by Dr. Lenz; Flegel's further exploration of the Benue, and his journey to the south; Rohlfs' Kufra expedition; the surveys in Abyssinia, executed by by the last-named traveller in conjuuction with Stecker; the East African surveys of Dr. Kaiser; and, lastly, the exploration of the region between the Luapula and the Lualaba by Dr. Böhm and Herr Reichard.—*Proceedings Royal Geographical Society.*

WHAT GEOGRAPHY OUGHT TO BE.

By PRINCE KRAPOTKIN.

[Delivered to the Members, in the Memorial Hall, Wednesday, November 6th, 1889.]

THE CHAIRMAN (the Rev. S. A. Steinthal) said that the reputation of the lecturer was as wide as the civilised world, not merely in connection with social questions but also with regard to scientific subjects.

Prince KRAPOTKIN then said : Before dealing with the main subject I will give some explanations of the map of Siberia and Central Asia on a scale of 1 to 2,500,000, which I have prepared to illustrate my lecture. It represents my own views on the structure of Asia, and embodies the results of the last explorations of Russian geographers. The difference between this map (which is very much like Petermann's map of Asia in Stieler's Atlas) and those common in England is that, instead of covering Asia with isolated chains of mountains like the Alps or the Caucasus, it shows the extension of the two great plateaux of East Asia and West Asia, fringed by border ridges, and having on both sides a succession of high plains and, further down, of low lands. The Urals also appear as a succession of chains running either S.W. to N.E. or S.E. to N.W., thus embodying the last explorations of the Geological Committee and of M. Kuznetsoff in the north. Since geographers had endeavoured to make geography an exact science its field had been disputed by all kinds of specialists, such as the geologist, the meteorologist, the oceanographer, and the ethnologist. In such conditions the geographer had to take a broader view of his subject, and consider his science as the study of those general laws which govern all the above separate phenomena, and disclose their mutual dependency. However, this wide range would easily divide into, at least, four separate branches, each of which could be best cultivated by the geographer. There is, first, the study of the great laws which govern the life of the earth's crust and shape its surface ; the growth of continents, their figures, their orographical structure, the changes they are steadily undergoing, and so on. Then there is the study of the separate climates as depending upon the characters of the earth's surface and the local topographical conditions—a wide field, upon which MM. Buchan, Mohn, Woyeishoff, Hahn, Supan, and so many others are working with so much success. And, finally, there is the study of the laws which preside over the dissemination of animal and vegetable life, and those which governed the life and development of human society. It also has been remarked that geography was not a science, because it was a simple description of facts—a *graphy*, not a *logy*. But mere description is impossible—every description necessarily requiring some classification—and every attempt at classifying necessarily brings us to a study of origin and laws of evolution. This idea is illustrated by some of the recent explorations made in Siberia and Central Asia, each of them showing how a simple description of the orography, or the fauna, or the flora of a locality implies a study of origin and evolution. M. Chersky's geological and orographical exploration of Lake Baikal ;

M. Yadriatseff's work on the rapid dessication of Lake Tchany; and M. Krasnoff's remarkable work on the flora of the Tian-Shan are so many illustrations of the fact that a simple attempt at describing facts of the present, involves the geographer in a series of researches into the past physical features of the country which he is going to describe. With regard to the flora of the Tian-Shan, it appears from M. Krasnoff's researches that during the earlier part of the post-glacial period the Tian-Shan and the great plateau were covered with a vegetation very much like that of Northern Europe nowadays, and, without entering into that much-debated question, it suffices to point out the bearing of that discovery upon the question as to the origin of the Aryans. It was said that the Aryans could not have come from Asia, because in their folk-lore mention was made of vegetation which rather belonged to a cold, sub-arctic climate, and not the dry vegetation of the steppes. It was true the Aryans could not have originated from the Asiatic plateaux if those plateaux had the same vegetation as now. But that vegetation was not the vegetation the mountains had had in the glacial period, or even in a later part of the post-glacial period. There was another duty which geography ought to perform, and that was to accustom people to consider that every nation had brought something most useful to the development of humanity, and not to consider that only a few nations were predestined to accomplish the progress of the world. Thus a great many national prejudices might disappear. Geography might also teach them that the lower races ought not to be treated as they are now—as enemies to mankind. They must consider the lower races as being a most precious element in our development, who ought not to be destroyed, as they were being destroyed, by whiskey, shooting, and extermination. He was persuaded that they might bring some new element into our life that we could not develop ourselves. Taking geography as an educational subject, everyone must have observed how much geography, which was an immensely interesting subject, was hated in schools as being one of the most annoying and uninteresting of subjects. Everything that concerned man was interesting to children. Geography might become one of the most powerful levers for inducing a taste for natural science, and a desire to study its laws, on the part of children. They could not interest children merely with classification of zoology and botany, but they could interest them with zoology and botany if they went through man and his habits, his hunting, and his life in different countries. It was much more advantageous not to begin with the description of minutiæ, but rather to begin with some broad general ideas on the structure of the earth, and then to return to a description of particular localities. Again, the advocates of classical education laid stress on the claim that that kind of education imparted to the pupil a human view of mankind. He thought that geography could do it better. What could be better than a description of the habits of all the tribes disseminated over the surface of the earth to interest the children in mankind? From this humanitarian point of view geography was a most formidable substitute for Latin and Greek. Finally, geography might become, in the hands of an able teacher, a kind of summary of all knowledge acquired in school in separate branches of natural science. It was not a simple coincidence that the *Kosmos* was written by a geographer. It is the duty of the teacher in geography to show the mutual dependency of all separate branches of knowledge studied in school, and to apply them to the study of the surface of the earth and its inhabitants.

The Rev. L. C. Casartelli, in proposing a vote of thanks to the lecturer, said he thought the Prince's remarks with regard to the cradle of the Aryan nations were extremely valuable.

Mr. J. Hoyle Todd seconded the resolution.

Mr. **Scott Coward** (Her Majesty's Inspector of Schools), in supporting the motion, said he cordially agreed with the ideas of Prince Krapotkin, which, if they could only be embodied in the educational system of the country, would produce in geography far different results to those which it was his misfortune often to witness. He did not say a single word against the results except that those results were produced without adequately prepared instruments. It was an admirable thing to interest children at the most impressionable period of their lives in their fellow-creatures separated by remote distances, because the very remoteness lent a charm to the subject. He did not hesitate to say that at this moment the geography taught in English schools was not sufficiently attractive. They had a number of names strung together, but what charm or what poetry had mere names? They had a number of definitions of promontories, capes, and rivers, but these were only the dry bones of geography. They were not on the right tack; they wanted a great deal of the play of imagination brought in, for with that play of the imagination they brought out the poetical and romantic powers of the child, and did him an immense power of good.—The resolution was passed, and a vote of thanks to the Chairman concluded the proceedings.

East London, South Africa.—Mr. James McCoubrey, formerly of Spital Tongues, Newcastle, writing from East London, South Africa, to the *Newcastle Chronicle*, says: "East London is a very thriving place, and if it continues to prosper as it has done during the past five years, it will soon be the leading town in the colony. There is only one drawback to its rapid advancement—that is its harbourage; but this only requires time and enterprise to make it the next best harbour to Cape Town. I believe that East London is one of the most important and healthiest towns in South Africa. It is a favourite sea-bathing resort, and there are many delightful spots in the neighbourhood. The town is fairly laid out. Some of the buildings are good, and of a substantial character. The railway locomotion and construction works are also good. Schools are of an advanced character. Since I have arrived at East London I have learned that it is a common thing to see churches open for prayers for rain. There had not been a good shower of rain for twelve months, but at last it came. All rain water is used here for food. It is as clear as crystal and splendid to drink. The weather is very hot, but we have cool winds from the sea. The heat up country is great. Fruit can be had in immense quantities—far beyond the need of the population. Oranges, peaches, and apricots are in many cases allowed to drop to the ground and rot by the ton. The fruits grown in profusion are oranges, lemons, pine apples, bananas, apricots, peaches, plums, pears, grapes, strawberries, gooseberries, figs, pomegranates, walnuts, almonds, citron, mulberries, &c. Vegetables of all kinds can be grown with little or no trouble if rain be plentiful. But I don't say this is a bed of roses. Far from it. It appears to be a lovely place to read of, but almost the opposite when it is seen in reality. South Africa is a good country for a man who knows how to work in an honest way, who does not stick at trifles, and who keeps himself respectable and sober, as a man ought. A good many who come over think they have nothing to do when they get here but eat the fat and drink the best of the land. That is where their mistake lies—at least, I have seen it so. There is great talk at present of the gold fields near here. We hear a good deal of the diggings, as the bullock waggons pass our house every week. It is quite true that men get from 20s. to 40s. a day up country. As to the work, it is hard; but you soon get used to it if it does not knock you down at the beginning. Sleeping in a tent is not so bad. Hundreds are sleeping on door-steps who cannot find a shady place on the road to lay down their heads. It is a common thing to give from 15s. to 30s. for a bed for one night. Living is very dear, especially at present, as fever is very bad. It is no object of mine either to cry up or run down South Africa as a field for emigration, but I desire to lift up a warning voice concerning the dire temptations and miseries to which young and friendless people are exposed in the larger towns of South Africa."

THE PORTUGUESE POSSESSIONS OF THE SOUTH-WEST COAST OF AFRICA, AND PARTICULARLY OF ANGOLA.

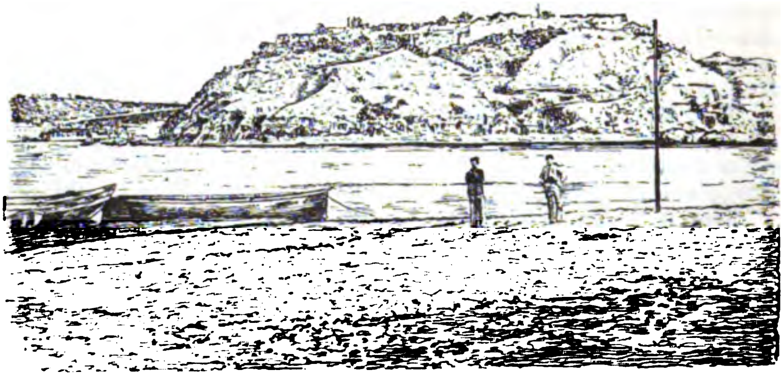
BY JOSEPH RIPPON, A.I.E.E.

[Read to the Members in the Library, Thursday, November 7th, 1889.]

NOW that the many parts of the coast and the interior of Africa are attracting so much attention in Europe, matter, however superficial, from frequenters of these places must be of interest. Angola, a Portuguese colony on the south-west coast of Africa, is not very much heard of out of Portugal, but it is considered by this country to be much as India is to us—a bright gem in their crown—and the present activity shown by its government will, it is hoped, lead to a great development of the country's resources. It will be seen by referring to a map of Africa that Angola extends from the Congo river on the north and southwards to Cape Frio; and a small patch hemmed in by French territory on the north and the Congo Free State on the south and east is, as well as the islands of St. Thomé and Principe, under the same flag as the rest of Angola. The best part of communication is kept up with Europe by means of good steamers (Portuguese), Lisbon being the point of departure, and the intermediate ports are the islands of Madeira, Cape de Verde, St. Vincent, and St. Iago, Principe, and St. Thomé, and the coast settlements Kabenda, Ambriz, Loanda, Benguella, and Mossamedes. However badly found they may be, they possess advantages which the steamers leaving Liverpool do not—viz., some attempt at fixed dates of arrival and departure and speed. The value of these advantages to business men and travellers is enormous. I purpose describing the places as they come "outward bound." The steamer, then, first touches Africa at St. Vincent (one of the Cape de Verde Islands). It is an arid island, but coal is obtained here. She then proceeds to St. Iago (another island of the same group), a place of little importance, and which during August presents a dry appearance, only relieved by verdant gullies between high volcanic peaks. Oranges and other fruit and vegetables are brought in by the villagers for the town supply every morning, and some quantity is taken by a line of small steamers which ply between these islands and Lisbon. Altogether there are about 50,000 inhabitants scattered over the island. The town of Praia is the chief one, and is made up of about half-a-dozen streets. The houses are small, but kept in good order. Later on, when the rains come, the island presents a different aspect—that of a garden. There are hospitals, a pier, the inevitable large Custom House (it is, of course, a Portuguese possession), and other government buildings, full of officials and soldiers.

From the ship's deck the Island of Principe, in the Bight of Biafra, presents a picture peculiar to nearly all tropical formations—a patch of verdure. But the nearer one gets the less this delight becomes, for there lurks malaria in every corner of this garden. The Portuguese delight in placing their settlements in a quiet sheltered nook; and at this port steamers of any size have to anchor at about the distance of one-and-a-half miles, at the mouth of a long narrow bight. The town at the head is dilapidated, and of little importance. It is hemmed in by high hills, and it must be a veritable oven all the year round. It also stands on a fork of land formed by two mountain streams, where—consequently in front of the town—is deposited generations of decayed vegetable matter. Fresh provisions are scarce. Cocoa is the chief export; but little is done, as no labour will come to the island, and there is little upon it.

The island of St. Thomé is as pretty and far more flourishing. The hills are covered with coffee plantations, and the exports to Lisbon are important. The low-lying town is a malarial bed, and the heat is, day and night, intense; but on the hills it is practically healthy and delightful. Fruits and flowers, both tropical and sub-tropical, are growing wild. Much fruit is lost entirely for want of labour to collect it. The Kroo and other boys from the coast of Africa say they are not allowed to leave on the termination of their contract, and will not, therefore, come here at all. This labour, notwithstanding our energetic ideas of the amount of work that should be done, and considering the deteriorating effect of the climate upon any human system, is good; and their value, to my mind, is got out of them. A Krooboy may receive up to 20s. a month, 1½lb. of rice per day, fish every alternate day, and the great luxury of meat on Sundays. Unfortunately steamers have to lie in the roads, and loading and unloading is slow and expensive. There is only a short pier running out from the Custom House to beyond the breakers.



Fort of St. Miguel, Loanda.
(Taken from the Island opposite Loanda. From photograph by Mr. J. Rippon, C.E.)

Two days' steam brought us to Kabenda, the port of the small patch on the mainland north of the Congo. It is tolerably healthy, and I daresay well known to many here as taking Manchester goods for traffic on the Congo. The chief house is an English one, and they possess good steamers for the purpose I have mentioned.

Banana is the port of the mouth of the Congo, and the turbid waters of this mighty river give notice of its existence for miles before the many islands, formed by a continual alluvial deposit at its mouth, are in view. Banana is then made up of one hotel and "factories." It is now the depot for produce procured up the river, which is shipped by some English and German steamers and all the Portuguese lines. Some of the former, however, go further up the river to Boma, the capital of the Free State, &c.; but my paper is about Angola, and the problem whether the Congo will for many years to come be of much use to us, is one in very able hands at present.

The Portuguese possession then begins again on the south side of the river, and their first settlement of St. Antonio is a poor one, and composed only of a few mission-houses and the usual official residences. After passing the lighthouse and small places *en route*, the next port of call is Ambriz. Here there is a small pier in a bad condition, and boats are run through the surf on to the beach. The town is a small one, but looks as if it had some life. On the north is the river Loge, but it is only navigable for small boats. Outside of Ambriz communication is stopped by the natives, and although Loando is only some sixty miles south, there is still no practical communication between the two places. Telegrams which were on the coast from Europe in two hours occupied twelve days in transit and detention between these two ports. However, the natives come in with ivory, rubber, &c., which they barter for cotton goods, guns, &c. The town lies high, but I could not find that it was any more healthy than Loanda. In fact, it seems impossible, so far on this coast, to get away from malarial troubles, whether on the plains or upon eminences, but so soon as the coast and its deposits are left behind then comparatively healthy places are found.

Loanda, the lower city. (From photograph by Mr. J. Rippon, C.E.)

São Paul de Loanda is the capital and the seat of the government, and is, to my mind, a city that should claim a good deal of attention at the present moment. Under the guidance of one of the most polished and amiable governors and an energetic and liberal-minded mayor, whose aims are the full development of the rich country surrounding them, the result must, if they are permitted to continue their wise course, be very successful. Monteiro writes, I believe in 1875, and his description might be taken to-day; but there is now coming on a leap towards activity which apparently was crushed out of the people when slave dealing was abolished. The entrance to the harbour is well lighted and can be entered at any time, and it is made by a rapidly-forming sand spit, on which the sea breaks, running parallel with the mainland, and leaving the only entrance for ships of large size. Monteiro says that on this spit an expert was brought out to plant palm trees, but before many were placed he was exalted to the post of Postmaster-General. However, if this is so, it is a pity such a profitable and beautifying project should have been abandoned. On this island are the naval quarters and coal deposits. Looking at the town from the harbour, the many-coloured sandstone pinnacles and cliffs form a pretty view. It contains about 23,000 people—3,000 whites, including over 800 convicts (it is a convict settlement), and the rest black. The plain, from the beach to the base of the cliffs, is covered with the principal houses of business, custom-houses, and some residences; and the upper city is connected by many good roads. Here are the houses of most of the well-to-do people, the public gardens, government houses and offices, and one of the best hospitals to be found. The native quarter again is distinct. Under the present crude system of sanitation the upper city is the only part fit to live in, and even here I question much the good name this place has for being a healthy one, as the climate is changeable. There are two seasons, winter and summer, the former from May to September. The average temperature is 75° Fah., and from October to May it is intensely hot, the two worst months being March and April, when the temperature may run night and day over 90° Fah. There is very little rainfall, but often thick mists during the cool season. It will be some time before the lower city can be made fit to live in, and the general appearance at present is one of dilapidation, many buildings being but half built and overrun with weeds, and others gradually falling into decay. There are being developed Government works for the repair of steamers, &c., but the price for work done and the workmanship must be doubtful until good skilled workmen can be obtained. The only existing bank is the Banco Nacional Ultramarino of Lisbon (London agents, Merchant Banking Company). The rates are high. Buying on Lisbon at sight 1% discount is charged, and the same on England for cheque is 4s. 6d. for 1,000 reis, the value of which is at par 4s. 5½d. It is difficult to obtain gold or silver and the bank exchange for notes, provincial government notes, which are only negotiable outside this province at a discount.

One great scheme likely to revolutionise the country is now, after the usual struggle, becoming an accomplished fact. This is the railway. It has an ambitious name—the Royal Trans-Africa Railway—and its terminal points are Loanda on this coast, and at present Ambaca is the eastern one. Its history is very interesting. In 1848 two Portuguese and a German projected this railway, and from '62 to '64 engineers were sent for a survey, and the project dropped again. In '73 it was resuscitated, and in '74 a concession was granted to put down to Golungo Alto. Another one was given in '75 for the Barraca line, via Oeiras, Lucalla, and Ambaca. These two joined and petitioned the Portuguese Government for another concession from Loanda, via Barracas and Oeiras, to Ambaca; and in '75 another survey was made. In '77 a commission was sent to examine tho region between Lucalla and Ambaca. During '78 to '82 the original idea projected in '48 was being fought by their opponents, who contended that the present sea connection was sufficient for carrying off the River Quanza (the mouth of this river is 50 miles south) produce, but after the railway scheme in '82 had been brought before the Geographical Society of Portugal a concession was finally, at the end of '85, obtained, and the work of construction of a line from Loanda to Ambaca was inaugurated in '86, October 31. The shares are guaranteed 6% for ten years on estimated cost of construction, and I believe the scheme was floated in London, Paris, and Belgium. The distance from Loanda to Ambaca is 350 kilometres, say 210 miles. There is some tunnelling to be done, between 200 and 300 kilometres, but otherwise there is no engineering obstacle. The maximum grade is 2½%; gauge, 1 metre; engines, 20 to 22 tons weight, all

Belgian make. The only obstacle on the plain as far as the hills is the climate, and this kills off a good many foreign engineers and labourers. After kilometre 140 has been reached, the coffee plantations, and also the rubber parts, will have been tapped, and the existence of a railway will, it is naturally supposed, free an immense number of carriers, leaving them available for labour which is so much needed on the plantations. The cost of carriage will also be reduced by fully two-thirds. The present passenger rate is equal to about 2½d. per mile, third class. The following is a general idea of the route. Passing from the suburb of Loanda, called Penedo, it runs along the back of the town towards the upper city, and then sweeps round back again to the seacoast (which, in my mind, it had no need to leave) at Cacuaco; thence it follows the beach to the river Bengo, where it strikes Quifongondo; thence up the valley of this river as far as Cabiri, when it runs off to the Quanza river, meeting it at Cunga, on kilometre 110.

The waterworks plant has been placed at Quifangondo, distant from Loanda 30 kilometres (18 miles), and pipes have been laid to filters to the cliffs overlooking the city, and from thence house and street connections have been made. This work has been done by the Cie. Général des Conduites d'Eau of Liége. This is a doubtful benefit, as there are no pipes for carrying off used water.

Land telegraphs connect inland villages, but communication is slow and unreliable. Cable communication is possible via the Cape of Cood Hope and Aden, or more direct northwards, along the coast and St. Vincent or Cadiz.

Portuguese colonies rely upon their custom-houses for obtaining funds. Here a vessel of 600 tons in port ten days would be charged for customs and other dues about £28; a steamer, say of 1,000 tons, for the same time about £21. From statistics I find that the total value of exports in '87 was about £250,000. The exports from Loanda are not bought there. They come almost entirely from the Quanza river. A little over £5,000 only came direct to England. Holland takes a larger share, and Portugal practically the rest—viz., about £160,000. The collection from the natives, &c., in the interior is very general. Coffee, ivory, rubber, vegetable oil, palm kernels, sugar, and orchilla weed are the principal. The value of exports from Ambriz would probably be about £60,000. In exchange for this the natives take cottons of all kinds, guns, powder, hatchets, knives, beads, &c. About the cotton goods you are well informed. The guns are German and Belgian make.

England heads the list of imports, and in '87 paid a duty of £52,894 upon a value of £191,838. Portugal follows next, value £54,393, and duty £5,776. The duty upon exports is 3% on produce shipped by Portuguese vesssels, and 5% for foreign vessels. There is only one English and one Dutch house in Loanda. The rest are nearly all Portuguese.

The country from the coast for some distance is arid, and relieved only by a few trees, the caju and the curious baobob, and short brushwood. I should think it suitable for the cultivation of mandioc and indigo. Sand blows down upon the lower city, and the roads built hundreds of years ago are now being resuscitated. They were in some places covered to the depth of over four feet. Life of any "useful" kind is very scarce. A few pigeons may be got, and occasionally a bird of what we termed "an unknown species" was bagged. The rivers and swamps of this low-lying plain are full of crocodiles; and the swarms of mosquitoes given off on any disturbance are too trying for outdoor sport. They are not the largest, but they are decidedly the most voracious insects anywhere to be found, and leather is not too tough for them to penetrate.

The Fetish religion of the native has too often been spoken of to be mentioned here. It will die out in time. A perfectly wild black is generally a gentleman.

Coast settlements south are Novo Redondo, Benguella, and Mossamedes. The produce imported and exported are the same, and for Mossamedes they amount to about £28,000 imports and £17,000 exports. Benguella and Novo Redondo are below this.

Although Mossamedes is a very sandy and uninteresting place, it is healthy. Emigration is encouraged to this place by Portugal and other congested colonies such as Madeira. An engineer has made a survey for a line of railway of 200 miles, but when the project may be carried out is uncertain, there being a vast deal of thought given by this country's experts before commencing an undertaking, or rather giving it to foreigners to carry out.

Death of Sir Salar Jung.—The death is announced of Sir Salar Jung, Prime Minister of Hyderabad. A correspondent writes: "Sir Salar was the quasi hereditary Prime Minister of the Nizam's state, and his quarrel with the Nizam two years since had sufficed to cloud the last two years of his life. He lived in the Deccan a life of feudal magnificence, his palace in the old city of Hyderabad being perhaps more spacious than that of his titular sovereign the Nizam. He was a young man of progressive views, and entertained Lord Randolph Churchill most magnificently when the latter visited India four years ago. Sir Salar was a most enthusiastic admirer of Mr. Gladstone, and his articles in the *Nineteenth Century*, in 1887, on the success of the federal system in Austria, and suggesting the policy of its extension to the entire Balkan Peninsula, elicited Mr. Gladstone's approval, and further gave such offence to the Sultan of Turkey that, it is said, the *Levant Herald* was warned not to comment on them. As Minister Sir Salar was too politically independent to secure the Residency influence, which, indeed, was generally exerted to thwart his wishes, as was the case also in his father's time."—*Manchester Guardian.*

The "Universal Hour."—Subjoined is the text of the proposals of the Bologna Academy of Science concerning the initial meridian for the universal hour, to be discussed at the forthcoming Geographical International Congress at Paris: (1) That the *status quo* be kept in navigation and astronomy; in other words, that navigators and astronomers should have full liberty to make use of the initial meridian they judge best. (2) That a double graduation be introduced in the geographical cartography of the different nations; the one in black lines, as usual, the other in red lines or spots, the first for the national meridian, the second for the universal initial one, or *vice versa*. (3) That the universal initial meridian be a neutral one; that is, of an international character, and not crossing any existing observatory, as this would forcibly imply a scientific pre-eminence of the nation to which it belonged. Let, rather, later on, either an international observatory be established at the place giving its name to the initial meridian, or a series of observatories be established along it belonging to the different nations whose line is crossed by that meridian. (4) That without further delay the universal hour be applied, together with the local one, to telegraphy. It would be enough for this purpose that henceforth every telegram should distinctly show, besides the local hour, that also of the initial meridian agreed to. All those who do not wish for any innovation will then find that everything goes on just as before, whilst bankers, merchant people, meteorologists, political men, journalists, and the like will have the advantage of being enabled to ascertain without any difficulty the moment of the sending, the several fluctuations in the stock market, and, finally, the duration of the transmission. (5) For any further application of the universal hour, considering that its urgency is not so evident as in the case of telegraphy, take experience as the guide, and let, at any rate, the interests of every nation be respected. Perhaps it would be advisable that the marine charts published in future, or simply republished, should bear also the double graduation mentioned above, and that ephemerides be published based on the universal initial meridian. In any case, however, the fullest liberty should be allowed as to the use of the same. (6) Finally, as regards the initial meridian, the Bologna Academy of Science has already proposed, and proposes again, the choice of the Jerusalem meridian.

GEOGRAPHY.

BY MR. CHARLES MARVIN.

[Address to the Tyneside Geographical Society.* Read to this Society, in the Library, Friday, December 20th, 1889.]

THE value of geographical knowledge he would assume to be admitted by everyone present, and would confine his remarks to the value of provincial institutions started of late years to place that knowledge within the reach of those who were outside the sphere of their great metropolis. Now-a-days, owing to the facilities for travel, and the extension of intercourse between our little island and the rest of the world, there were few people who were not called upon at some period of their lives to proceed abroad. When such an occasion arose, he was convinced that he only re-echoed the opinion of everyone present when he said that it must be an unquestioned conveniense to be able to proceed to such an institution as the Tyneside Geographical Society and find there obliging and competent officials ready to place at the disposal of the inquirer the latest books and maps dealing with the country in question, and imparting information obtained first hand from travellers. Again, now-a-days competition abroad compelled merchants and manufacturers to be constantly seeking for fresh markets. Here, again, such an institution as the Tyneside Geographical Society performed a useful function—a function that should be recognised and recompensed by all commercial men, a function which was illustrated by the bringing to Newcastle of travellers recently arrived from newly-discovered countries, enabling the merchants and manufacturers of the district to hold personal intercourse with them in regard to the regions just explored. In Germany and in France this useful function was performed by commercial and geographical societies, and in this country it was sometimes, but only, he was sorry to say, in a casual and spasmodic manner, performed by our Chambers of Commerce. It was here that the Tyneside Geographical Society stepped in and did very useful service, and he believed he was not unduly optimist when he said that the more the commercial men of the North supported the society the more effectually would that society be able to promote commerce by obtaining information relating to the development of trade in new markets and in foreign lands. Thirdly, the Tyneside Geographical Society was calculated to render important service with matters as yet but dimly appreciated by the British people. Every year competition became keener at home, and the superabundance of population compelled every wise father of several sons to think in good time of giving at least one or two of them a chance in the colonies. Formerly, a father, if wealthy, confined his attention to the army, the navy, the church, and the professions. Now-a-days he added the colonies. This fashion of sending sons to Canada, Australia, or South Africa was extending from the wealthy to the middle classes, and he trusted that in time it would become common among working men. They might depend upon it that if a father in good time prepared and sent a lad to a British colony, he gave his son a better chance in life than he had at home as a clerk. In making a choice of a colony, both father and son would be more liable to be properly guided if they had been members and attended the meetings of the Tyneside Geographical Society. And the lad would be more at home on his arrival in Canada, Australia, or South Africa, if he had frequently listened to lectures and read the books in the society's library dealing with those countries. The society was thus calculated to be of extreme use to the middle classes and the masses, and, in the shape of a colonial inquiry office, could render valuable aid to those who had many sons and did not know what to do with them. Finally, there was the political value of the society. A diverting and surprising work might be written on the blunders perpetrated by our statesmen and generals through their ignorance of geography, and his own opinion was that three-parts of the failures of the British foreign policy arose from the extraordinary ignorance of the average statesman and member of Parliament of the geography of the empire over which they were called upon to rule. In this respect they were at a disadvantage with foreign statesmen, that while geography was neglected, he would add criminally neglected, in English schools, it was so thoroughly taught in Germany and Russia that the statesmen of those countries were better able to extend their interests and to negotiate treaties than the average English ambassador or envoy. Mr. Marvin concluded his preliminary remarks with a hope for the continued success and prosperity of the Tyneside Geographical Society.—*Newcastle Daily Chronicle.*

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* The remarks of Mr. Marvin on the uses of the Tyneside Society apply equally to ours.

Italian Interests in Africa.—Prof. Guido Cora, of Turin, has drawn up a table of Italian dependencies in Africa:—

	English Sq. Miles.
1. POSSESSIONS—	
Massowah, with Keren and Asmara	3,000
Dahlak Islands	425
Assab, with Raheita and Beilul	5,500
	8,925
2. PROTECTORATE—	
Habab, Bogos, Beni-Amer, &c.	10,000
Danakil Coast and Isles	6,500
Sultanate of Opia, Seaboard	13,500
	30,000
3. SPHERE OF INTERESTS—	
Interior of Danakil and Sultanate of Aussa	31,000
Interior of Opia	33,000
	64,000
Total	102,925

To these must now be added the protectorate over Abyssinia, with Shoa, and the Galla District, conquered by King Menelik, equalling altogether some 200,000 square miles. Hence the total area of the regions for which Italy is responsible is about 300,000 square miles, or nearly three times the area of the Kingdon of Italy.

L. C. C.

THE RESOURCES OF SIBERIA AND THE PRACTICABILITY OF THE SEA ROUTE.

By H. N. SULLIVAN, F.R.G.S., of London.

[Read to the Members, in the Library, Friday, December 20th, 1889.]

In considering the question of opening up any new field of trade, we should inquire (1) Whether there are reliable and inexpensive means of communication. (2) Whether there is a profitable commerce possible with the country, a demand for our goods, and a supply of produce that the country can give us in exchange. (3) Whether there are likely to be obstacles or facilities put in our way by the inhabitants and government of the country. If these three questions can be favourably answered, then there is scope for enterprise, and success will depend upon the capital at the command of the adventurers, the ability with which they conduct their operations, and the perseverance, patience, and energy with which they meet the difficulties, disappointments, and temporary failures that are sure to arise in the early days of any undertaking. From the days of Willoughby, in 1550, a north-east passage has been the dream of many navigators. The Norwegian fishermen were in more recent years attracted by the walrus fishing toward the Kara Sea, and penetrated that water. Captain Wiggins, as is well known to most of you, for many years held the idea there was a possible open route to Siberia in this direction, but he had not, at first, means at his command to carry out his idea. At length, in '74, Wiggins was able to fit out an Arctic steamer, the Diana, cruised two months in the Kara Sea, reached the mouth of the Obi and Yenisei, and came back to England announcing the route was open. Besides being practically the first navigator to reopen the door to these regions, he is the only navigator who has persevered, and so many as five times carried out successfully his plans—so far as the sea route is concerned, the only man who has stuck to the work, the one who has, I believe, most clearly solved the problem of navigating these waters with certainty every summer. Much as I should like to describe all the expeditions that followed Wiggins, I can on this occasion only briefly refer to them. In 1875 Professor Nordenskjold, who was backed up in this enterprise, as in his previous Arctic expeditions, by Oscar Dickson, the wealthy Swede, accompanied by two other scientific men, following Wiggins's track in a sloop, reached the mouth of the Yenisei, ascending it (I believe in the Russian steamers), and returned overland. Capt. Wiggins also made an attempt this year. With the assistance of some friends he equipped a little cutter 45 feet long. He sailed much later than Nordenskjold, and, meeting with continued heavy north-east gales, he was beaten back from the Kara Sea. In 1876 the two navigators, in friendly rivalry, again started. Nordenskjold, with the munificent Oscar Dickson again at his back, sailed in the steamer Ymer, reached the mouth of the Yenisei, and was fortunate enough to catch the Russian river-trading steamers, and sent his goods in them to Yeniseisk. Capt. Wiggins, only a week or two behind him, in the Thames, a steamer he had fitted out with the help of some friends, including Mr. Charles Gardiner (who had himself navigated the Kara Sea in his yacht, and who has continued to give some support to all our recent undertakings), ascended the river as far as the Kureika River, which was wrongly pointed out to him as a safe wintering place. Leaving his crew in comfortable winter quarters, Wiggins sledged to Europe, and came to London, in hopes of organising further work. He returned to his ship, after a few weeks in England, accompanied by Mr. Seebohm, the naturalist. This gentleman describes the width of the Yenisei here as 3¼ miles broad, the Kureika one mile where it entered the Yenisei. The natural forces displayed by the spring breaking up of the ice are described as dwarfing those of Niagara into insignificance. Fancy the whole river 3¼ miles broad rising 70 feet. The ice was piled up near the Thames 60 feet high. The poor Thames, in her unsafe quarters, was ultimately somewhat damaged, and Captain Wiggins sold her to the Russians. There was a little vessel, the Laria, built at Yeniseisk, that Captain Wiggins desired to return home in, but the crew would not venture. However, the Russians themselves sailed her through he Kara Sea to Europe and reached St. Petersburg. This was in 1877. The same year, other nations being attracted to the work, we have the Louise and Fraser steamers, the Fraser going to the Yenisei and returning, the Louise going to the Obb.

In 1878 we have a number of successful voyages. Wiggins's voyage from Liverpool in the Warkworth to the mouth of the Obb and back to London with a cargo of wheat. Nordenskjold in the Vega, in which he accomplished the north-east passage. Accompanying him, the Lena, which went up the Lena to Yakutsk, the Fraser and Express sailing ship which went to the Yenisei and back to London. The Neptune, which went to the Obb and back. The Sibir, built at Tjumen on the Obb, came to Europe. The Moscow paddle tug to Yeniseisk. The Zaritza to the Gulf. This shows five years of consecutive practical navigation by sixteen vessels. In 1879 we come to the first failure. Against Wiggins's urgent entreaties the merchant he took to the Obb in the Warkworth chartered five large iron steamers totally unfit to meet any ice. They reached the Kara Straits, which were then blocked by ice, and after waiting a few days returned to England. But three days after their departure the ice all cleared away, and the Louise, which was also there and had waited, went through to the Obb and back again, thus shewing the work could be done even during such a ear when there was more ice than usual. 1880: Neptune and Louise to Obb and Yenisei. Siberiakoff lost Oscar Dickson through mismanagement. 1882: Varna, sailing ship, got beset. Lieut. Hovgaard, in the Danish steamship Dijmphna, seeing the Varna in the ice, went into the pack to reach her, and got beset himself. He afterwards announced that had he not left the clear waterway, he could easily have reached the Yenisei in 1882, and again in 1883 after he was freed that summer. His observations during the winter spent in the Kara Sea show that even in winter this sea is not frozen over, for the pack he was beset in drifted here and there during the whole period. In 1883 the Louise also got to the Obb, but she lost her funnel in a gale, could not steam, and was stranded on a sandbank in the Gulf of Obb. Thus we have, over ten years, the record of twenty successful voyages, the failures unimportant. There were two or three attempts made by Siberiakoff and another, which did not succeed, but I firmly believe these failed more through unskilful navigation and through ignorance of the set of the ice in these parts than through any impracticability of the route.

Summing up the results of these expeditions, I fully believe that Wiggins's theory is well founded. The results lead us to this conclusion. The Kara Sea itself offers little difficulty to navigation, although sometimes the straits leading to it may be temporarily blocked by ice when long-continuous north-easterly winds have collected the ice and driven it down into this corner, whence it has little room for exit. The work should not be attempted without proper Arctic steamers, so that a passage may be forced on occasions that iron steamers would be turned back. Besides, the effect of butting a piece of loose ice during dark or fog would probably be fatal to an iron steamer, harmless to a wooden one. A knowledge of the general movements of the ice in the Kara Sea is necessary. On temporary closing of these lower straits, some ships have taken the Matotschkin Straits, with sometimes good, sometimes bad results. Wiggins is against this route, and from the accounts of some attempts I am led to think that there is often, but not always, ice akin to the middle pack of Baffin Bay, which prevents ships coming through this strait crossing the Kara Sea, whilst there is free passage from Kara Straits, and always open water down the west side of Yalmal. Mr. Gardiner found this in 1876, when Wiggins and Nordenskjold crossed without opposition. Again, although I fully believe in the possibility of every year crossing the Kara Sea, should it be impossible, I think we might round Nova Zembla. In the worst years for the Kara Sea recorded, 1879 and 1882, Captain Markham, R.N., and Mr. Leigh Smith found the north end of Nova Zembla very clear of ice. This, of course, is a longer route.

VOYAGE OF S.S. PHŒNIX.

After hearing Captain Wiggins's lecture in 1884 I studied the subject, and, at length, in 1887, succeeded in getting sufficient support from my friends to purchase and equip the s.s. Phœnix, and buy a small cargo. I sailed with Captain Wiggins on 5th August for the purpose of superintending the commercial arrangements, and for inspecting the country. We saw no ice but on one occasion, and, with our steamer drawing 11 feet water, without much difficulty ascended the magnificent river. We fortunately picked up a young doctor at Dudinka, who offered his services, and as he spoke French we were able to communicate in a roundabout way with the fishermen, who acted more or less successfully as indicators of the channel. Coming to the village of Silivanika, where the religious sect of the Scoptsi dwell, we decided to leave much of our salt here. We heard that there was a difficult pass at the junction of the Tungoos River, and that there were cataracts and very little water—only 5ft. We discharged half our cargo, lightening to 8ft., and there was a great desire to put out all, but I did not care to take only an empty ship to Yeniseisk, and decided we would keep the rest on board—at any rate, until we found we could not get on. We heard of a certain pilot who had discovered a new channel, and I went up two days steaming in the launch, with the docter, to procure the services of the man. Fortunately finding him, we quickly ran down, the pilot on the way sounding over a ridge of rocks, the shallowest part of the river, over which the pilot Nestor said there was usually only 8ft., but owing to the greater height of water that year we found 12ft. Coming to the steamer, we then began a task which taxed the skill and steadiness of captain and crew and the strength of our engines. The Yenisei here passes through high rocks, on the top of which the wrecked timber showed where the spring flood sends the ice among the trees. The centre channel is deep, and the stream runs fully seven knots, according to Captain Wiggins's calculation. The local steamers have not sufficient power to stem this current, and, being of light draft, take a five-foot channel inside some islands, where the stream is much slower. No one had ever been down the main channel, which was believed to be encumbered with rocks, forming cataracts, until Nestor bravely ran down in his boat and found a deep water channel. The swirling of the water caused by the swiftness of the current perhaps gave the idea of the cataracts. Slowly the Phœnix, with engines working their utmost, stemmed the current, and soon we could boast of having taken the first steamer up this main channel. Our good friend Nestor then left us, and we went on in our usual way until we had accomplished the 1,500 miles of river to Yeniseisk. I cannot stop to dwell upon the interesting features of our journey. The river, at this distance from the sea, is a mile broad, and forms a water highway unsurpassed, I believe, in the world, for it is navigable almost into Chinese territory. I may here mention that the failure we experienced last year was not caused by any impediment in the Kara Sea, but solely through the grounding of the Phœnix in the Yenisei. We were informed that she could not be got off. We had calculated the chances of such an accident, but could not procure the necessary funds to guard against it, as we desired, by sending with the Labrador a second tender, with which to tow a barge with our cargo up the river, should the Phœnix not meet the sea steamer at the mouth. When the accident happened I then was able to pick up and send out a paddle tug passenger boat, but this caused a month's delay. In a gale the steamers separated, and missing each other at the rendezvous, the tug Seagull returned to Vardoe. Meanwhile the Labrador found some ice in the straits, but after the lapse of a few days this all cleared away, and she went easily into the Kara Sea, which she found quite open. The walrus vessels reported that they had been as far north as the 75th parallel in open water. Captain Wiggins did not go on to the mouth of the Yenisei, which he could easily have done. It was then the 26th September, and late in the season, and no object would have been gained but the proving of the openness of the route, about which he had quite sufficient evidence already. We have quite recently formed another little syndicate. The Labrador sailed on August 5, and we have chartered the light draft paddle steamers of the Russians to convey our goods on the river. I hope we may hear soon of complete success. I received on Saturday the following telegram from Consul Holmboe, at Vardoe, who has, doubtless, received intelligence from some returning walrus sloop: "Straits, Kara Sea, penetrable; Labrador probably Goltcheeka."

DESCRIPTION OF SIBERIA.

I will now give some brief account of the country itself. To say that Siberia contains 5½ millions of square miles may convey no real impression to your minds. Look at any map. Then you will begin to take in its vast size. From the North down to about the Arctic circle we have the treeless Tundra, covered in winter with nearly 10ft. of snow, the ground in summer thawing but to the depth of 12in. Yet this region is carpeted in summer with numerous flowers. The natives roam it with their herds of reindeer, ever wandering in search of fresh moss. Next we come to the forest region, extending for hundreds, nay, thousands of miles. The trees met with are the larch, the cedar pine, the white birch, the lime tree, and mountain ash. The furs of Siberia are many of them more highly prized than those of North America. We have the white and brown bear, the white and blue fox, the wolverine, badger, polecat, sable, ermine, weasel, otter, beaver, grey squirrel and flying squirrel, the chinchilla. Do not imagine that the treeless Tundra or the wooded Taigar contain no hidden wealth. Gold, graphite, copper, coal, or at least a valuable lignite, are known to exist in many places accessible to our barges on the Yenisei, and exploration will doubtless reveal many deposits elsewhere. As the African ivory becomes more and more scarce, so will the fossil mammoth ivory of the north increase in value. But the real wealth and the more habitable and populated region begins with the northern limit of cultivation about the 60th parallel. No district in the world will beat in productiveness the upper watershed of the Obb and Irtish. The steppes nourish enormous quantities of cattle, sheep, and horses. The main centres of the grain districts are at Barnaoul and Semipaulatinsk, on the confines of China, and the produce is conveyed in barges down the river to Tjumen, a far greater quantity than most people have any idea of finding its way to Europe, even to London. The chief grains are wheat, barley, oats, rye, buckwheat. Hemp, flax, and their seeds are exported in large quantities, likewise potatoes.

MINERAL WEALTH.

In the Newcastle Natural History Museum are 400 fine specimens of Siberian mineralogy, presented to the town by the late Emperor Nicholas. These come chiefly from the Urals, Ekaterineburg being the centre, the wealth of which I will not attempt to describe. The next important centre is Barnaoul. Great quantities of silver and copper are here found and melted. 40,000lb. weight of silver annually is sent to Petersburg from Barnaoul, from which 3 per cent of gold is extracted. The third centre is Nertchinsk, producing, besides gold, silver, iron, antimony, arsenic, tin, and lead. Precious stones abound throughout Siberia. Whilst these named centres are the chief, many other important mineral districts exist. On the Upper Yenisei are ironworks, the ore smelted by charcoal. These ought to be the main sources of supply, if properly worked, of Eastern Siberia. But they are in a most neglected state owing to want of capital. The manager of the Government Bank at Krasnoiarsk said to me, "If you English would only come out and work our minerals you would make more money than is made in gold mines. Local capital will only be put into gold works, hence our other minerals are quite neglected." When it is stated that Siberia produces one-tenth of the gold of the world, the purchasing power of the country can be imagined. Whereas many of the mines are Government property, many are private. The discoveries of Welsh gold are hampered by a tax of, I believe, 30 per cent. The Russian Government exacts only a tax of 3 per cent, but Government takes, and is responsible for the safe conduct of, all the gold produced, giving the mine proprietors fair credit for it. The standard work on Gold Mining, by Locke, gives many particulars of the Siberian production. He mentions particularly the miners of the Yeniseisk district as being the first in the country to improve the old methods of mining. But very much yet remains to be done before they can be said to work on most recent scientific methods.

Captain Wiggins and myself drove 100 miles to some of the Yeniseisk mines. We saw them in winter time, and therefore at a disadvantage, but there was abundant evidences of prosperity in the state of the works and dwellings. Never shall I forget the silent beauty of those drives, under the full moon, through forest cuttings so narrow that the wind found no entrance, and so the giant fir trees sustained a weight of snow that added an indescribable beauty to the scene. The stillness of the forest was unbroken save by the music of the bells. That we were upset ten times during the first night did not spoil the impression. I would undergo the mishaps again for the same treat. Nor shall I easily forget the hospitality afforded us in the midst of that primeval forest, or the kindness of the gentlemen summoned from the neighbouring mines to bid the foreigners welcome, and the attention shown us during our inspections by day and the merry hours with songs and games in the evenings. The record was stamped on my memory still deeper shortly after on hearing of the sudden death of our host, the manager, through illness intensified, if not actually brought on by his care of his guest. He had deprived himself, unknown to me, of his fur to supply the place of mine—the attendant had sent mine elsewhere—as we ascended from the warm shaft into a temperature of 30° below zero.

EUROPEAN LUXURY.

From the above remarks you may gather that the natural resources of the country are of great value. We should therefore expect the inhabitants, if they had in any measure made use of their advantages, to be living in comfort. To those whose idea of a Siberian dwelling is a hut I would recommend an inspection of my photographs in the room adjoining. Wooden houses there are, many preferring them to stone or brick. Church and schools costing from 20 to 50 thousand pounds are presented to towns by merchants and miners who seek an outlet for their wealth. You may hardly credit my statement, but I will quote the words of a French writer (M. Meignan): "Lost in wonder at the palace of M. Kusnezow (Krasnoiarsk), as extensive as our grand Parisian mansions and almost as luxuriously appointed. There are several others almost as grand. The miners of Irkutsk are still more extravagant in their fancies, favoured by their wealth. The most prolific gold mine in all Siberia yields annually £1,200,000; it is the property of three proprietors only. The gold miners of Irkutsk, the tea merchants of Kiachta, to finish with these instances of the flaunting of stupendous riches—gratify their passion for exciting envy and wonder by considerable donations to the churches." You may gather that such communities require supplies of various goods to no inconsiderable extent. The Government and bank buildings, shops, assembly-rooms, and theatres would bear comparison with those of our provincial towns. There is not only a demand for soft goods, but for machinery. The miners want heavy machinery by water, which they cannot get overland. The electric light would do there, because there is no gas to compete against it; other illuminants are dear, and therefore, with cheap fuel and plenty of water power at hand, the electric light has a good field. Therefore, when such goods are carried by sea and no duty is exacted on them, we should be able to sell them, giving an advantage to the Siberian merchants and realising a handsome profit over the costs of the enterprise.

INLAND COMMUNICATION.

I will now describe the present means of communication by which merchandise is transported this immense distance. Goods from France, Germany, and England are sent to Moscow by the ordinary routes. Foreign and Russian goods, during the summer months, leaving Moscow, are conveyed by water to Perm, thence formerly by road, now by the recently-constructed railway over the Urals to Tjumen. Over 300,000 tons of merchandise are annually sent into Siberia by this route. At Tjumen they are again transferred to the river system. You will observe that, whilst the general flow of the Siberian rivers is northward, the branches trend east and west. Following the goods down the Tobol and Irtish, they then join and ascend the Obb, and thus goods are carried to Tomsk by water. Thence they are sent eastward in summer over almost impassable wheel-roads; in winter by the cheaper and easier sledge roads to Krasnoiarsk. This river route is the only summer one, and the lowest transit rate is £20 a ton from St. Petersburg to the Yenisei, but, as a rule, far higher rates are paid, and heavy goods, such as machinery and boilers, are conveyed with the greatest difficulty. In winter, the rivers being frozen, the only transit over this immense distance is by sledge, consequently the cost is enormously enhanced. The distance from Nishni Novgorod to Krasnoiarsk is 2,500 miles. On our way home by sledge on this route I calculated we met on an average 800—1,000 freight sledges a day in caravans of 100 to 200, half from the east laden with tea, half from the west with sheet iron, machinery, rails, and packages, the contents of which were not visible. The Government have just made a canal from a tributary of the Obb to the Yenisei, but I doubt if it is yet practicable, and, being made far too narrow, it is likely to prove a failure. From the Yenisei to Krasnoiarsk goods go eastward by road to Irkutsk and other towns. The wealthy Sibiriakoff has acquired the monopoly of transit on the Angara, on condition of his making it navigable. There are rapids of about ten miles' current. He has laid down in them chain cables sent overland from Newcastle, and has built two powerful steamers with additional appliances for chain-hauling up the rapids. He has, besides, to spend a large amount in blasting rocks in the rapids. If he succeeds he will have executed a grand work, and one which will be most advantageous to us, opening up by water the Irkutsk district. We have valuable minerals which this summer we had hoped to get floated down in barges from Irkutsk, but this was impracticable. There is a Government scheme for the construction of a railroad, which will probably be the longest in the world. I find the popular idea is that it will damage our sea trade. But I am looking forward to its construction with interest, as I anticipate great advantages from it. It is to start only from Tomsk, passing through Krasnoiarsk, Irkutsk, right away to Nicolaivskey. The only loss to us will be the cheapening by £2—£3 a ton of the cost of transit from Tomsk to Krasnoiarsk, 370 miles, and so reducing the selling price of our English merchandise at Krasnoiarsk by this amount. But, on the other hand, it will open to us a better market in Tomsk for our goods sent up the Yenisei, and will enable us to tap a most valuable mineral and agricultural district. Then, again, by the cheapening of the cost of transit eastward of the Yenisei, it will improve the trade both outwards and homewards with this region. A still further work may be carried on up the immense but rapid tributaries of the main rivers by providing very fast light-draft steamers and launches. There are comparatively few roads in the country. The great main road east and west is the trunk artery, fed by the few minor roads that branch off, but all the rivers are highways, being available for steamers, and barges and boats towed up by convicts, horses, or dogs, also in winter forming splendid sledge-roads, which thus feed the main road. It is generally thought that it must be a terrible drawback for a country to be frozen up five months. But it is the winter that is looked forward to as the cheap and easy time for transport where there is no water communication. Every stream is then bridged, the muddy or baked lumpy road, over which wheeled traffic is conducted with great difficulty and fatigue to men and horses, is exchanged for a smooth and amost frictionless track, along which you may for the most part gallop in comfort, at least until much traffic has spoilt the road. Produce can be brought from the farms without fear of decomposition for many months. In such a vast country winter brings many blessings that we certainly cannot appreciate at a distance. So much for the means of communication.

ATTITUDE OF THE RUSSIANS.

Next as to the attitude of the people and of the Government towards us. On our arrival with the Phœnix, we telegraphed to the British ambassador at St. Petersburg, Sir Robert Morier, respectfully asking him to request the Government to grant us freedom from duty on our goods. The Czar was at Copenhagen. A messenger was despatched to him, and he personally signed the decree in our favour, and a fortnight after our arrival the goods were free to be sold. The governor of the province of Yeniseisk telegraphed congratulations upon our reopening to them the route they feared had been lost. The merchants, at first, were somewhat suspicious, fearing lest we had come, as others had before, to open up a competing retail trade in the country; but, after a time, on my assuring them our desire was only to do a wholesale trade with themselves, supplying them with goods cheaper than they were now getting them overland, they saw their own advantage, and confidence was restored. The miners and manufacturers gladly welcomed us, seeing the advantage they would gain, especially by getting improved and heavy machinery by water carriage. The richest gold miner there, who has led the way in the new quartz crushing, said to me, "What you want to make your scheme succeed is co-operation on our side, and I am ready to do what I can to assist you." The only people who are opposed to us are the overland carriers and some Russian manufacturers. But three-fourths of the press of the home country is in our favour, saying, "Is the interest of Siberia to be set aside for the benefit of a few Moscow merchants?" I myself believe our very opponents will rather gain than lose if we succeed in assisting in the developing of the country. As to the Ministers, every assistance has been afforded us by them. They are naturally desirous of developing the latent wealth of this splendid country. They have shown us their goodwill by granting five years' freedom from duty on almost all sea-borne imports. For years they have desired to see this route developed. Pessimists shake their heads and say, "That is all very well, but what about the end of this period?" My strong belief is that it will be our own fault if these privileges are not then extended. If we only do harm to Russian commerce during this period, then we cannot expect or deserve further concessions. But if we can show that the people of Siberia are really to be benefited, and the country is better developed by having access by water to European markets, then I fully believe the Government will continue the privileges now granted. The Russian Ministers are doing everywhere what they consider to be best for the development of Russian trade, and we must applaud their patriotic motives, even if we do not entirely believe that their methods are the best calculated to advance the general prosperity of the people. They are assisting their people in developing a trade with the East, as we heard from Mr. Curzon. Instead of crying out against a Government for doing their duty, let us do ours. Let our Government do as much as they can, consistently with our economical principles, and let our manufacturers and merchants do their part, and we shall succeed ultimately in every instance except where natural advantages of production and transport are on the side of other nations. My business travels in Europe, as well as in Siberia, have convinced me that English manufacturers and merchants are to blame for much of the difficulty of competing with those of other nations. But I cannot here take up this wide question.

Names and Heights of Summits in the Owen Stanley Range.—The following are some of the principal heights observed by Sir. W. Macgregor's party:—

	Feet.		Feet.
Mount Victoria	13,121	Mount Griffith	11,000
" Albert Edward	12,500	" Gillies	8,000
" Scratchley	12,000	" Parkes	8,000
" Knutsford	11,157	" Musgrave	9,100
" Douglas	11,796	" Belford	6,000
" Service	10,000	" Henry Forbes	(?) 3,000
" McIlwraith ... between	and	" Frank Lawes	(?) 3,000
" Morehead	11,000		

—*Proceedings Royal Geographical Society*.

German New Guinea.—In the course of a short excursion from Finsch Haven, Dr. Hellwig, the botanist, made in January last an ascent of the Saddle Mountain (3,182 feet), which is situated about 5½ miles from the coast. The whole mountain is very rugged and densely wooded.—Baron von Schleinitz has prepared on a large scale a map of the coast of Kaiser Wilhelm's Land from Cape Cretin to the Legoarant Islands, near Hatzfeldt Harbour, embodying the results of recent surveys and observations.—*Proceedings Royal Geographical Society.*

Two of W. & A. K. Johnston's Recent Maps.—*The "Modern" Map of England:* This map is on a scale of seven miles to the inch, and shows all the towns and most of the villages, estates, and antiquities. Railways (with stations marked), roads, and canals are also distinctly shown. The map is therefore well adapted for library and office use, and should also be invaluable to the tourist, pedestrian, or the cyclist. The complete map, in four sheets, coloured, size 35 by 29½ inches each, 3s. 6d. per sheet, on cloth to fold and in cloth case. This is a useful map, and will commend itself to those who require a map on the road or for office reference. It is clearly printed and coloured.—*Library Map of Asia ("Modern" Series of Library Maps)*: Size 52 by 43 inches. Price, in four sheets, coloured, 15s. This new map of Asia is a beautiful map, pleasant to see and handy for use. Members will have pleasure in examining it at the library, and it will be found very useful in following the new Asiatic developments. The mountains and rivers are fairly shown and it is a creditable specimen of English cartography.

IN TROPICAL AFRICA.

[Read to the Members in the Library, December 15th, 1889.]

A CORRESPONDENT, writing from the King's Kraal, Matabeleland, South Africa, on August 25th says: It is a hot Sunday afternoon, and somehow or other my thoughts always turn more particularly to England and my friends on Sunday afternoons; but what a contrast in my surroundings here to the cool luxury and delightful accompaniments of English summer days. I am nearly 1,000 miles from the last outpost of civilisation, in tropical Africa, surrounded by savages in the heart of Matabeleland, amidst a tribe of bloodthirsty warriors, who hate the very name of white man, and who live by raiding their more peaceful neighbours. If our friends in England only knew what a boon their letters are to us they would be more generous in writing. Our post is primitive. Letters are carried by native runners, who do their thirty to forty miles a day, whilst the ox-wagons which larger expeditions have to use for the journey can only average fifteen to twenty, forcing their way through thick bush-veldt, sinking up to their axles in the deep sand-beds of dried-up watercourses or impeded by huge boulders. Add to this the numerous delays caused by break-downs, straying trek oxen, prolonged halts at water-pits to enable them to recover from forced journeys through the "Great Thirst Land," and you can easily realise how it is that travelling in the interior of Africa is such a long affair. To complete the picture you must know that it is impossible to move during the heat of the day, and that our difficulties are increased tenfold on moonless nights. We were lucky enough to pass through the "lion country" in northern Bechuanaland without any mishap to man or beast, but several of our cattle took their last drink in the Crocodile River, which, as its name implies, is infested with these reptiles. "Que diable allait-il faire dans cette galère?" you will say perhaps; and, indeed, I sometimes feel inclined to ask myself the same question. I have joined the expedition, which is headed by an old friend of mine, E. A. Maund, and was originally formed a year ago to take a message to our Queen from King Lo Bengulo, the most powerful native ruler in Africa. With it the king sent two of his trusted Indunas—Umsheti and Babaiaan—his object being to convince himself that "a great white Queen" really existed, and that we Englishmen had a big kraal of our own somewhere across the "big river," and were not simply a tribe of adventurous wandering spirits. The Indunas, as, of course, you know, were well received in England, and the Queen returned a gracious message. It was accompanied by a beautifully-framed portrait of her Majesty, and a big gold necklace with the inscription, "From Queen Victoria to Lo Bengulo," and numerous presents from Lord Knutsford and others. Several reasons prompted me to join this expedition on the return journey. One great incentive was the promise of grand sport—I have not been disappointed. Along the Marico and Crocodile rivers and their tributaries are gathered together at this dry season of the year all the game which would otherwise be spread over a vast region. Many kinds of wild buck, one more beautiful than the other, and quantities of guinea-fowl, paauw (a kind of wild turkey), pheasants, and partridges fell to our guns. Quagga, giraffe, and lion, although seen by us, we had no time to hunt. The old Indunas, being in a desperate hurry to reach their own country, would have resented the delay caused by an organised hunt; and, besides, we were confined to the immediate neighbourhood of the out-span camps by the numerous and harrassing duties connected with the supervision of a large expedition consisting of five heavily-laden ox-wagons, each with a span of eighteen oxen, fifteen horses, spare oxen and sheep for food, and thirty natives belonging to different tribes. The old chiefs know nothing about trekking, and on several occasions became so impatient that they started off on foot ahead of the wagons. One day they had to walk thirty-seven miles before reaching water, and then had to wait two days on scant rations before we came up with them. One of these men is seventy-five years old, but the tough old Zulu (the Matabele rulers are of Zulu origin) was none the worse for the escapade. On another occasion, in spite of our warnings, they left us, armed only with assegais, in the worst part of the lion country. When we followed a few hours afterwards we saw to our horror that their footprints had been partially obliterated by the spoor of a lion. Fortunately, however, he had followed them only for some hundred yards, and then, probably not being hungry, had wandered off towards a pool of water. Such vagaries were to us a source of constant anxiety, for how could we face the king without bringing back his Indunas? Our own lives would not have been safe. We should have been proclaimed as impostors or accused of witchcraft. However, we managed to divert their minds and keep them employed at the wagons by shooting twenty-six grey monkeys for them. The skins of this particular species are only worn by Royalty or big chiefs. From that time until our arrival at the king's kraal they spent every spare moment in working at these skins, such simple children of Nature are they.

At the Matabele frontier, 150 miles from here, permission was obtained for the four white men of the party to enter the country, and a messenger was despatched to the king informing him of our safe arrival. Before reaching the king's kraal we were, however, halted at one of his regimental kraals, containing his bodyguard, the "Umbesu," a thousand strong—a wild, unruly lot of young fellows, wearing a sort of Highland bonnet of ostrich feathers, leopard-skin girdles, and fantastic anklets and bangles. It was the king's pleasure that his head witch-doctor should sprinkle us with a certain concoction, in order to invest our mission with importance in the eyes of his people, before we were admitted to the royal presence. It was the first time that this ceremony had been performed on white men, and we valued the compliment accordingly. At last, after having been three months on the trek from Kimberley, and two months from Mafeking—the last frontier police outpost in Bechuanaland—we find ourselves amongst this strange, warlike, semi-hostile people, in an uncultivated country bigger than England, everywhere overgrown with beautiful tropical vegetation, and containing about 300,000 inhabitants, 30,000 of whom are soldiers. Scattered amongst them dwell about fifty white men only, carrying their lives in their hands, for there is no telling when the moment may come when the wise old king will no longer be able to restrain his young soldiers, who are not allowed to buy wives until they have blooded their assegais. To take a white man's life counts as a deed of great valour; but we have lively hopes of the effect which will by degrees be produced by our mission. Umsheti's and Babaiaan's tales of the big kraal whence come all white men will be spread from mouth to mouth throughout the land. Of the discipline of our soldiers, the power of our monster guns, the electric light, and the abundance of good things everywhere displayed they never tire of speaking with bated breath and suitable gestures. Our wagons are besieged from sunrise to sundown by queens, chiefs, warriors, and slaves, all begging for "toussa,"—gifts—and none are sent away empty-handed. A blanket, a knife, a bit of calico, or a few beads delight their hearts, and they realise, let us hope, that with our extinction these good things would cease. The sick and the maimed are doctored and bandaged, and thus the thin end of the wedge of friendship is inserted, and when they have grown more used to our presence the fear and hatred of the mass of the people may disappear. Our so-called civilisation is, I fear, inexorable. Gold is known to exist in this country, and where gold is the white man will come eventually. I must confess to a feeling of deep regret that this light-hearted unsophisticated people must, under the pressure of the advancing tide of the European race, either fall back or disappear. They have no cares beyond the moment—death has no terrors for them. They are comely, in youth sometimes even beautiful—of a colour like old bronze—never black like the negro. They need never want for food, and the skins of wild animals provide all the clothing which is necessary in this climate. What adequate benefits can we give them in return for all this? Lo Bengulo was much struck by the portrait of our Queen in levee dress. "I can see in her face," he said, "that she is the Great White Queen." When her message thanking him for his kindness to her countrymen was read out, the thirty-seven Indunas present in council murmured long "koomalos," or royal greetings, and thanked their king for his wisdom in sending his own "eyes and ears"—Umsheti and Babaiaan—to receive her words. The colours of an English boat club now adorn the head of one of the king's eighty wives. I was wearing them round my throat when the "Icosicass," who had never seen anything quite like them before, begged me to give her a bit. I am therefore without my necktie, but have gained, I hope, a friend, and in any case have transferred a badge of English athletics to a very exalted position.—*Daily Telegraph.*

Atlas of England and Wales, 57 maps and a good index. W. & A. K. Johnston, London.—A new atlas, arranged in counties alphabetically, the maps carefully drawn and clear, railway lines and canals shown—an interesting contribution to local geography, and very useful for reference.

Atlas of Commercial Geography. By J. G. Bartholomew, F.R.G.S., with Notes by Dr. H. R. Mill. The University Press, Cambridge. Price 3s., 46 maps, coloured.—This atlas is intended to accompany Dr. Mill's "Handbook on Commercial Geography." It is an extraordinary production. No school or teacher can afford to be without it, and the price it is issued at by the University Press is so small that there can be no excuse for using anything of a less perfect kind. We welcome this atlas and others as evidence that a great awakening is taking place in reference to the quality of teachers' tools in this country.

Discovery of Relics of Captain Cook.—On pulling down a part of Sir Joseph Banks's Museum at the back of 22, Soho Square, London, in a recess with doors that had not been opened for half a century, a very interesting collection of relics of Captain Cook's voyages in the South Seas was discovered. Inside the panelling the following inscription was found in the handwriting of Sir Joseph Banks, who accompanied Captain Cook in his travels: "Instruments used, carvings, weapons, and heads collected by Captain Cook during the voyage of the Endeavour.—J. Banks." These relics have been bought by Sir Saul Samuel, the Agent-General for New South Wales, and will shortly be despatched by him to Sydney for the State House Museum at that place. Among the collection are the following interesting articles: Old quadrants and other instruments used by Captain Cook on board the Endeavour, four of which are in oak cases; two mummied tattooed heads of New Zealand chiefs; two native models of New Zealand canoes, one carved; two large carved canoe paddles, carved spears and war clubs, a native chief's paddle, beautifully worked with idolatrous carving; a very fine stone hatchet with handle, and upon it the following inscription, in the handwriting of Sir Joseph Banks: "Brought to England in 1775 by Captain Cook from Otaihaite;" and a wooden bowl, with lip, used for handing round human blood in the days of cannibalism. There is also a carved wooden sceptre, with the following words scratched on it, presumably by Captain Cook: "Made for me by Wanga.—J. C." The genuineness of these articles seems to be proved by the fact that Sir Joseph Banks's handwriting can be identified.—*Newcastle Chronicle.*

A SPRING RIDE IN SOUTHERN SPAIN.

[Read to the Members of the Society, in the Library, December 15th, 1889.]

It was during the most wretched weather in London in February last that circumstances caused me to take ship for Gibraltar. I had, when quartered on the Rock some years previously, made many expeditions into Spain, either for shooting purposes or in the pursuit of ornithological research, and had always retained a vivid recollection of the long rides through that splendid wild country which were a necessary part of these trips. I now found myself, by a sudden turn of luck, in a position to gratify my desire to revisit the scenes of my early expeditions.

Most things in this world are, no doubt, gauged by contrast, and nothing could afford a more telling example of this than my sensations at finding myself, after four days' voyage, on my arrival at Gibraltar in the middle of an English summer, and at the same time calling to mind the horrors of snow, slush, and damp cold I had so recently left behind me in London.

As is generally the case, I found I had so much to do in the few days available at Gibraltar that it was a matter of no small difficulty to plan out what to do and what to leave undone until that indefinite "next time" should come to pass. One thing I was determined upon, at all events, and that was to ride through a certain mountain pass which led to the part of the country where I had passed many happy days shooting and ornithologising, and which had always been preserved in my memory as one of the things to do again. Accordingly, having made the necessary arrangements, and found a couple of congenial spirits, who, although they might not share in my especial occupations, were at all events ready for an outing, and did not object to hard work, we rode out from the old Rock soon after morning "gun-fire" on March 6.

The weather in the spring at Gilbraltar is proverbially uncertain; heavy rainstorms, lasting for several days at a time, are by no means uncommon, whilst, on the other hand, there are often weeks together of the most glorious weather. On the occasion of our start we were favoured by a splendid day. Those who have visited Spain will understand what this means, as it is useless for me to attempt to describe the beauties of an early spring morning in that country.

We had sent on our baggage on pack animals on the previous day, with instructions to our *arriero*, or man in charge of the horses, to stop at a small venta about twenty miles out for the night, and to continue the journey early on the following day, our intention being to cover the whole distance of some forty to forty-five miles in one morning, and to have a look round the place the same afternoon. The pack-horses carried our guns, ammunition, blankets, and a week's supply of provisions; in consequence we ourselves travelled light, with only our waterproofs strapped on our saddles, and the day's rations for man and horse in our saddle bags.

Once through the gates of the fortress, we cantered across the neutral ground to the Spanish lines, and followed the shore for five miles up the river Guadarranque. This we crossed by the well-known ferry, and, pushing across the low hills beyond, traversed the Palmones Plain, through which flows the river of that name, reaching the town of Los Barrios at 8 a.m., twelve miles from the Rock. Here we came upon a metalled road, a rare article in this corner of Andalucia, which we followed for about a mile, and then struck off to the left into the Palmones valley again. This road was originally destined to run between Los Barrios and Casas Viejas, but at present ends incontinently in the mountains, and hence is of little use to anybody. After crossing some deep clayey hills, covered with palmetto where not cultivated, we once again came on the Palmones river, and forded it.

Rivers are a great trouble at times when travelling in Spain; a heavy storm of rain makes them impassable, and often, after the floods have subsided, treacherous quicksands are formed, which are most unpleasant to traverse. On topping the ridge of hills beyond the river, we found ourselves about to enter the Pass of Ojen. It was now 8-30, and we had covered some fifteen miles from the Rock. Up till now our progress had been fairly rapid, but we were about to encounter more difficult ground, and, what was more interesting, traverse a most picturesque part of the country. A deep watercourse, or *garganta*, runs down through this pass, joining the Palmones river some five miles beyond Los Barrios, and our route now led us down a steep hillside towards this stream, which, were it in England, would be the beau ideal of a trout brook, brawling as it does over boulders, and with quick runs into pools deep enough to hold many a good salmon. The bridle road, or rather track, wound down amongst a thick growth of dark green lentiscus bushes, intermixed with white heath in bloom, and great masses of golden genista, which gave great brilliancy to the scene. Arrived at the bottom, we skirted the stream, whose course was divided in all directions by a dense growth of oleander not yet in blossom. A month later the channel of this stream, as of all those of Southern Spain, is marked by a broad crimson line, formed of the beautiful flowers of this shrub. In a sheltered spot in the valley we came to an old flour-mill, whose site had no doubt been chosen on account of the fact that the stream is a perennial one. All the same, to English notions it was most inconveniently situated, as access to it was most difficult—a matter, however, of sublime indifference to a Spaniard, who always appears to have plenty of time to surmount any difficulties, more especially as he always can, and generally does, defer any troublesome job until *mañana*, or to-morrow.

Around the mill were many dark-foliaged orange trees, at this time laden with golden fruit, also lemon trees equally well garnished. A little way beyond the mill the track led to a ford across the Garganta, through a deep stony gully. The stream itself was, at this point and beyond, fringed with alder trees, which had been most roughly treated by the "freshets," the inevitable accompaniment of each storm of rain in the mountains. As our horses stumbled across the ford amongst the masses of rock and stone, and between the islets of oleander, we remarked that some 10ft. above the present level of the water, which barely reached our horses' girths, great masses of *débris* were jammed into the branches of the alder and other trees, marking the height to which some recent floods had attained. The woods bordering the stream were alive with birds, and the whole place resounded with their song. The well-known call of the English chiff-chaff, at this time on his journey to England and the north from his winter residence in Central Africa, was heard on all sides. Swallows hawked insects in the brilliant sunshine, and many butterflies flitted about over the gorgeous flowers, and all this less than a thousand miles or so from England, fated to be still enveloped in fogs and snow.

The track now skirted the stream on the far side along grass patches, and through scrub which grew higher and denser as we proceeded. At one point a huge mass of rock some 30ft. square had toppled down from the heights above, and blocked up the course of the stream, which had, as it were in revenge, cut out a splendid deep pool for itself, out of which it swept with great swiftness round the corner of the rock. A more perfect place for a fish could not be imagined, and no man with the soul of a fisherman could pass it without wondering whether he could not get a rise out of its mysterious depths. One of my companions had, indeed, made an expedition to this point in the preceeding summer, upon which occasion he had seen a fish of nearly a pound weight, which was certainly not one of the usual denizens of the Andalusian streams—to wit, the barbel.

In a gully some few hundred yards beyond the ford another old mill was situated, shaded by two huge weeping willows, the only ones in this part of the country. The Pass of Ojen runs in a S.W. direction for about ten miles to a point where the venta of that name is situated; it then bifurcates, one valley trending towards Algeciras, and the other or main branch leading in a W. direction towards the great plain of La Janda. The track leads along the northern spurs of the pass, at times ascending some hundreds of feet, and at others descending close to the torrent below. Either side of the valley is bounded by steep sandstone and limestone crags, the summits of the hills being formed of white serrated rocks, which at many places are inaccessible. Innumerable spurs run down from these great walls of rock, separated from one another by deep gullies through which flow sparkling streams. These gullies are the result of ages of denudation, and are some of them of considerable depth, and all bear evidence, in the wild confusion of water-worn rocks and boulders, of the force and effect of the torrents to which they owe their origin. Generally speaking, the track over the spurs was on hard, sandy ground, cut by the feet of pack animals into narrow and deep channels. In the hollows the soil was clayey or of black loam, and at places up to one's horse's hocks in mud.

As we entered deeper into the pass, the hillsides became dotted with the cork and olive trees, and the scrub grew more and more luxuriant. The white heath, which had at first been only 2ft. or 3ft. high, now appeared in fine masses 7ft. and 8ft. in height, individual specimens reaching to more than double this. The yellow genista or prickly broom, and still more brilliant common broom, stood over 10ft. The scrub of lentiscus was also intermingled with the beautiful gum cistus, now in blossom with its delicately coloured pink or white flowers, much like an English dog rose. Wild lavender and mint grew in profusion wherever the soil was light and sandy, and a host of other flowering plants, which to my great regret I had not knowledge enough to name, made up a picture which could not but strike even the most indifferent spectator with admiration. Birds were less plentiful than in the jungle-like growth near the main stream. The inevitable little stonechat, a well-known resident, appeared on the top spray of bush after bush as we rode through the scrub; and as we crossed the bright red patches of sandstone on the higher spurs, the crested larks fluttered ahead of us with their soft whistle. This little bird is called by the Spaniards "carretara" or the "road-man," from its peculiar habit of frequenting roads. The French, for a similar reason, have dubbed it "l'allouette des grands chemins." Higher up the hill-sides in the water courses we came upon great masses of rhododendron, the brilliant flowers of which were just breaking out.

About ten o'clock we entered a wood composed chiefly of Spanish oak, cork, and wild olive trees. No doubt in former times this forest growth covered the whole country side, but the improvident Spaniard, who takes no thought of the morrow, although he invariably puts off any work until that day, is steadily destroying the timber for charcoal. This part of the route was in its way even more beautiful than the hill sides we had traversed. The oak trees, with wide-spreading branches, shadowed the track, which wound amongst grey boulders mottled with vividly coloured lichens. The trunks of the oaks were festooned with the hare's-foot fern, which appeared vividly green against the dark stems, and which latter in their turn formed a striking contrast to the rich russet and deep red tints of the cork trees, which had without exception been stripped of their bark—a valuable marketable commodity to the Spaniard. Splendid trees of laurustinus, now one mass of white flowers, were to be seen at intervals through the wood, whilst a species of creeper, with a thorny stem and leaves like an ivy, hung in festoons from one tree to another, making up a picture of nature run wild most difficult to describe. The flower of this laurustinus is pure white, and not unlike the guelder rose at a distance. The wood was alive with birds, the English blackbird and chaffinch perhaps asserting themselves beyond the rest. Titmice, both great, blue, and crested, flew from tree to tree, and kept up their merry if somewhat monotonous calls, whilst the small serin finch, the wild canary of the country, was to be heard trilling on all sides. Half an hour later we reached the open ground near to the Venta Ojen ; this is the only house on the road through the pass, and, like most solitary houses in Spain, is built for defence and strongly walled, with an inside patio for the safe-guarding of the pack animals of travellers. Near to this spot there is an ancient Moorish burial ground. The remains of an old paved Moorish road appeared and disappeared at intervals during our ride through the pass. As has been already stated, the valley at this point bifurcates, and there is a considerable stretch of undulating ground, cultivated at places. Beyond this the hillsides were clothed with dark-foliaged cork and olive trees, dotted in places with ash trees, in their brilliant green dress of early spring.

Once again skirting the torrent, which flowed as before through a wilderness of oleander, cane brake, reeds, and alder trees, we continued our way over a series of spurs scattered with cork trees. Here there was less scrub, and, in consequence, the bracken was more plentiful. The ground was covered with the russet remains of last year's giants, for the bracken, like the heather and genista, grows on a grand scale in these parts. The young plants of the year were hardly more than a foot in height as yet.

Shortly after eleven o'clock, as we topped a rocky spur, the great plain and the waters of the Laguna de la Janda, sparkling in the sun some twelve miles distant, came into view. No words of mine can describe the fascination which this first sight of the plain has to a sportsman or naturalist who has once visited it. Possibly it is because, after an undoubtedly arduous expedition, the "land of promise" is at last in sight. We were still at a considerable height above the open country beyond the pass, and which in consequence looked a great deal nearer than it actually was.

Immediately to our front, and barring, as it were, the entrance to the pass, was a wooded conical hill, surmounted by an old Moorish fort, made, no doubt, to command this road to Gibraltar. Beyond this the hills fell away to the northward and eastward, disclosing the wonderful vega. This latter is bounded on the west side by a series of rocky and wooded hills, known as the Sierra de Retin, on a ridge beyond which the white walls of the old Moorish town of Vejer de la Frontera show out clearly, although twenty-four miles distant. The great vega, or plain, some ten miles wide by twenty miles long, lies below. In summer this is a stretch of grass land covered with cattle, and with a few lagunas or swamps in its lower portions. In winter it forms a vast inland sea, and is the haunt of innumerable wild fowl. Beyond the town of Vejer, again, lie some sandy hills, the famous heights of Barrosa, whence the French, under Marshal Victor, were so unceremoniously ousted by Graham's British troops, in spite of the incompetence, if not treachery, of their apathetic ally, La Peña. In this battle, which Wellington characterised as one of the hardest-fought actions of the Peninsular War, no less than fifty British officers and close upon two hundred men were killed and wounded, and the 87th Regiment captured a French eagle.

We now descended a series of clay hills under cultivation, most execrable of roads, rendered more than usually trying for the horses by reason of the large boulders half buried in the mud, over which they slipped and staggered. The birds evidently voted this region an unprofitable one, and none were to be seen except a few peewits. To our left the heights rose steeply, at one point forming a steep cliff, over which a few vultures sailed with motionless, outspread wings.

At noon we had reached the exit of the pass, and halted at the small "venta," which lay at the foot of the conical hill already mentioned, known as Sobalbarro. In the barn where we fed our horses the swallows were already nesting. It was ten years since I had visited this spot, and I was not a little surprised to see that on the western side a fine house had been built, which one of my companions, who had more recent knowledge of these parts than I, explained to me was the casenà, or shooting box of a Spanish marquis, the local grandee.

Our course was now nearly all plain sailing, for it lay over the gentle undulations of ground, skirting along the east side of the Vega. Now and again we had to ford a stream running in a wide sandy bed, with vertical earth banks, cut sharp and clear by the torrents which sweep down from the mountains. Except where we had to cross cultivated ground, the going was most excellent, and our little Spanish and Barb horses went away at a hand canter, as if they had only just come out of their stables.

Away we went over the grass land, through miles of asphodels, many of which were up to our horses' withers. These flowers are well-known all over the Mediterranean, but are perhaps nowhere seen to greater advantage than on the vegas of Spain and Morocco. Amongst the asphodels were many broad-leaved plants like giant lillies of the valley, a species of squill.

On the low cultivated hills are dotted here and there large cortijos, or farmhouses. Some of these are built on a very big scale, for the reason that in olden days it was found desirable for the inhabitants engaged in agricultural pursuits to live together for purposes of defence against the brigands or marauders from the mountains. Also the number of oxen, &c., employed for tillage purposes is very large, as many as thirty teams, with their ancient patterns of wooden plough, being constantly seen working at one time.

The wonderful richness of the alluvial soil of the Spanish vega is shown by the crops of wheat, barley, and beans which are raised by the primitive system of cultivation employed, the ground being merely "scratched," to use a very old simile.

At the time of our journey the young wheat was from 6in. to a foot in height; large gangs of labourers, men and women, were to be seen working in strings of twenty in a line, hoeing the weeds and breaking the surface of the ground sodden by the heavy rains of the winter. Now and again we espied several pairs of cranes stalking about in the cornfields. These big birds nest in the high rushes in the marshes, and are resident throughout the year in these parts, but their numbers are largely increased in the spring by the migratory birds, which, coming in from the south, appear to find excellent quarters for a time amongst the muddy flats left by the receding waters of the laguna. Later on we are abreast of a grand cliff known as the Laja del Aciscar, a well-known breeding station of the Spanish griffon vulture. These huge birds build equally huge nests in the caverns and fissures on the great sandstone cliffs, and eleven years ago, in 1878, I paid them a visit, and had a most interesting climb over the face of the great precipice with very satisfactory results in zoological line, so far as my own feelings were concerned. The view from the summit of this cliff, some 400ft. above the plain below, is perhaps one of the most striking in this part of the country; enormous herds of cattle, mares, and droves of pigs were dotted all over the grass land. As we passed through a cork grove which ran out down one of the valleys from the sierra behind, we saw several bulls, but none of them "toros bravos," as those bred and appropriated for the bull ring are commonly designated. This question of bulls is one of the bugbears of this part of the country, and, unlike many bugbears, is no question of fancy or imagination, but at times a very serious fact, which has to be faced and discounted for previous to making any arrangements for sporting in the vicinity. There are very few men who have travelled much in this district who have not had some unpleasant experiences of these savage brutes.

The Spaniards, who breed the best fighting bulls, are exceedingly particular about their animals, and, with a view to preserving them in a fit state of bad temper—so that upon their appearance in the arena they are bound to "go for" anything, horse or man—endeavour to keep them away from all intruders as long as they are in the semi-wild state in which they pass the first six years of their existence. It is a well understood law of the land that should anybody kill a bull, even in self-defence, when off the main roads or tracks, he must pay heavy damages amounting to from £60 to £100. Since all an Englishman's sport is sought for and obtained in the wildest parts of this country, an interview with a bull is by no means a rare occurrence. The best breed, the celebrated Toros de Varela, so celebrated in the bull rings, are herded in a district north of the vega, and the drivers or herdsmen are well mounted men, dressed in the well-known picturesque garb of the picador, less the silver lace and tinsel. These men are to be daily seen driving cattle, with their long lances resting across their saddle bows.

The inhabitants of these districts appear to know intuitively whether a bull is a "bravo" or fighting bull, or the reverse; and I have frequently—on the strength of an assurance that the bull in question was not "malo"—gone into a marsh after the coveted snipe, or later in the season after some especially-desired bird's nest. On other occasions, the disagreeable fact of finding one's favourite place in possession of a truculent-looking bull has caused me to adopt the safer method of leaving him as sole occupant.

Some twelve miles of undulating ground brought us to a depression running up from the laguna, which in the winter months is generally under water. Descending into this, we plashed slowly across it, through deep soft mud, and eventually reached the rising ground beyond. We were now within a mile of our destination, and accordingly turned off to a spring by the way, to water our horses before coming in. This spring, which bore the high-sounding name of the Fuente de la Cara del Sol (since it faces the south, like many others in this country), is a relic of the Moorish occupation of Spain. The water is conducted from its source in the hillside by a bricked aqueduct into a large masonry trough some 20ft. long by 4ft. wide; the overflow of this fills a similar trough below the first one, and so on again and again. Most of these sources (or "fuentes" as the Spaniards call them) consist of three or four such troughs, and are in consequence capable of watering a large number of thirsty animals at a time.

We walked our horses on to a halting-lace, having been just eight hours on the road, and soon settled them in their quarters, none the worse for their forced march.

The cortijo where we took up our quarters for the night was a goed specimen of the class of building affected by the Spaniards engaged in raising and guarding the herds in this essentially pastoral country. Owing to the long duration of the winter floods, it is not possible to cultivate many thousands of acres at all in these parts; hence such portions are exclusiuely used for grazing, and, under the rays of the warm sun, no sooner do the waters recede than the most luxurant grass-crops grow as by magic on the moist land.

The site of this cortijo, on a most commanding spur of some high table-land, surrounded on three sides by the great vega, had undoubtedly been first chosen by the Moors, who seem to have had an excellent eye for taking every advantage of the conformation of ground. Close outside the cortijo some Moorish remains evidenced that this had been one of their fortified posts; whilst below the house two fine wells, similar to the one already described, proved that in the selection of their posts they had due regard to the advantages of a good water supply. The cortijo consisted of a large quadrangle with buildings around it, one story in height, and with huge buttresses outside; whether for strength, or the remains of a higher building, I cannot say.

The single entrance through an arched gateway was flanked by a loopholed wall, whilst all the older portions of the house had no windows opening outwards, all of them looking into the patio, or courtyard. In the newer part, a few small windows, strongly barred, enabled a view of the country outside to be obtained.

Perhaps, however, the most interesting feature of the whole place was the courtyard, which was divided into two portions by means of a high stone wall and the existence of some half-dozen curved shelter walls, built close to the main walls. These were for the purpose of places of refuge from bulls when the latter had been driven into the cortijo previous to being escorted by bullocks and guarded by picadors to the scene of their slaughter in the arena. A large stone circular corral or pen at one angle of the building, with a gate opening into the country, served as a sort of ante-room for the bulls previous to being separated or transferred to the inner inclosures.

People who have not travelled in these wilds of southern Spain can have but little conception of what a business the bull fighting is, and how it affects in many ways the whole lives of the simple people who live in the districts where fighting bulls are bred and preserved. Bull fighting is the one topic which will rouse the most lethargic Spaniard into the highest state of excitement, and I have found myself an object of the greatest interest, and I believe veneration, upon being able to give them an account of some recent great festa at Cadiz or elsewhere, where some favourite espada had performed some prodigies of bull-fighting courage, Cruel as the sport most undoubtedly is, ever since I have seen so much of these fighting bulls in their wilds, and learnt to hold them in such genuine respect, I must confess that a bull-fight has to me a degree of fascination which it is impossible to describe. Setting aside the horrid brutality to the horses in the bull ring, the rest of the spectacle, when there are good bulls, is one of the finest displays of pluck imaginable, and I often think I would like to place some of the men who sneer at the danger of bull fighting within one mile (not nearer) of one of the "toros bravos" on the plain of La Janda and study his actions. But to return to the cortijo. One side of the square was devoted to stabling horses, another was a granary, while the rest formed dwelling-houses, fowl-houses, &c., all mixed up together, and well tenanted by fleas. Of a night-time a number of cattle were driven into the yard for the sake of protection, and after dark it was no pleasant job to thread one's way through the great horned beasts as they started up and blundered off from the stranger, whose presence they seemed to readily detect.

The weather on this expedition turned out most exceptionally bad, as it so frequently does in the spring months in Spain. The wind veered to the south—a bad quarter for rain, and known as the "viento del móro" by the Spaniards—and the rain came down for a couple of days and a night in a manner that must be seen to be believed. The last day of our return journey was performed in a perfect hurricane of rain, which at times rendered it impossible to see for more than a few hundred yards, and turned every brook and rivulet in the pass into a raging torrent.

Arrived at the Venta Ojen, some arrieros, or muleteers, declared we could not possibly get on; but, as our presence was required at Gibraltar, we pushed ahead, and succeeded in fording all the smaller gullies without any mishap. As we traversed the pass we could hear the roar of the waters in the garganta at the foot of the hill, and, when we eventually neared it, found it was a roaring cascade, some thirty yards wide, and fifteen feet or more in depth. The alder trees were all swaying in the furious current, and the oleanders under water, whilst uprooted trees and *débris* came surging past every moment. By means of making a long detour, we succeeded in crossing the river Palmones by a bridge above the point where the garganta joins it, and thus secured our retreat. This bridge is a new addition, and in the old times, before its construction, when I first visited Spain, the pass of Ojen was liable to be closed for days at a time in the heavy rains.

Despite a most uncommonly severe wetting, and nine hours in the saddle in addition, the memory of the ride out through that splendid wild country will last a long time ; and I only trust that some day I may have the good fortune to find myself once again working my way on a good horse through the pass of Ojen.—V.

Tyneside Geographical Society's Local Excursion.—The second excursion of the Tyneside Geographical Society took place on Monday, August 5th, when the members were invited by Mr. Albert Grey, vice-president of the society, to visit the ancient ruins of Dunstanborough and the interesting country surrounding the Howick domain. Rain fell heavily at intervals, and the outlook as train time approached was so ominous that over one-third of the party decided not to venture. About fifty, however, including eight ladies, determined to defy the elements, and these proceeded by the 8-20 train to Longhoughton and Little Mill. Arrived at the former station, fourteen hardy Northumbrians left the train, and were driven to Boulmer, where they embarked in large fishing cobles for Dunstanborough Rocks. Meanwhile, the rest of the party proceeded to Little Mill, where they were met and welcomed by Mr. Albert Grey, who had brakes in readiness to convey them to Dunstanborough. Through the mist could be descried the sails of the cobles, which, favoured by an increasing breeze, the last hope of finer weather later on, came along the coast at a fine rate. The party explored the various points of interest, including the well-known Rumble Churn, so graphically described by Lewis in the celebrated ballad, "Sir Guy the Seeker." During the prevalence of north-east gales the waves rush up this abyss, the water is lifted many feet above the common level, rising towards the walls of the towers as if they would surmount the cliff and deluge the plain. The breaking of the waves in foam over the extreme point of the rocks, the heavy spray, the noise of the disturbed waters, and the groans which re-echo through the desolate towers on such occasions, are both grand and awful. Mackenzie, Hodgson, and other local writers suppose that the castle was first a British stronghold and afterwards a Roman castellum, yet it does not appear to have been mentioned in history until the beginning of the 14th century, when it belonged to Thomas, Earl of Lancaster, grandson of Henry III., and General of the Confederate army which opposed Edward III. In 1462 the castle was destroyed by Edward IV. and dismantled, since which time it appears to have been in ruins. Nothing now remains but the outworks on the west and south sides, which, with stupendous basalt cliffs towards the sea, enclose a plain, nearly square, consisting of about nine acres. The whinstone rocks to the north are perpendicular, of a columnar form, about thirty feet in height, black and gruesome, the shore rugged, covered with broken rocks overgrown with seaweed. An excellent lunch was served by Mr. Hall, of the Star Hotel, Alnwick. Mr. Grey, whose thoughtful kindness was beyond praise, had meantime returned to Howick, and now rode back to intimate that rooms and fires were awaiting the still wet and chilly ones at the Howick mansion, an announcement which was as timely as it was welcome, and in a few moments the desolate sea and coast were left to the caterer and his assistants, a few fishermen, and a fragment of a German band, which persisted in enlivening the lunch with a series of English airs, *à l'Allemand.* "Home, Sweet Home," and "God Save the Queen," will not soon be forgotten. The first glint of sunshine pierced the cloud as the brakes were boarded, and the rain had entirely ceased as they drew up at Howick. Very soon "bits of blue" appeared, the sun completely changed, and white fleecy clouds took the place of the darker ones of the morning, and a delightful afternoon was spent by all parties. Thanks were given to Mr. Grey for his kind reception.—*Newcastle Chronicle.*

THE IMPERIAL DECREE ON RAILWAY EXTENSION IN CHINA.

(From the *Times*.)

[Read at the Meeting, in the Library, December 20th, 1889.]

THE DECREE.

"The Admiralty has submitted a memorial on railways, in which it recommends that the suggestion of Chang Chih-tung to build a line direct from Lu-kow K'iao to Hankow should be carried out. This, the Admiralty is of opinion, should be commenced from both ends as a tentative measure; in the south from Hankow to Sin-yang Chow, in the north from Lu-kow K'iao to Chêng-ting Fu, leaving the intervening sections for a future period. Li Hung Chang will consult with the Admiralty on the details of the necessary arrangements to be made with a view of at once giving effect to the scheme proposed. Chow Fu, provincial judge of Chihli, and the Taotai Pan Chün-teh are selected, from their experience in railway affairs, to superintend the carrying out of the preliminary steps. The Sovereign is of opinion that to make a country powerful railways are essential; but, recognising that at the outset the people will have doubts and suspicions, orders the viceroys and governors of Chihli, Hupeh, and Honan to issue explanatory proclamations to them exhorting and commanding them to throw no impediment in the way. It is the Imperial desire that all shall work together to make this great work a success."

The *Times* remarks on the above decree:—

"Lu-kow, from whence the line is to start on the Peking side, is about five miles south of that capital, on the borders of a hunting park of the Emperor. Half the line, it will be observed, is to be constructed by Li Hung Chang and half by Chang Chih-tung, who has just been transferred for the purpose from the vice-royalty of Canton to that of the Hu province, at the capital of which the line will practically terminate for the present. In a memorial from Chang, recently summarised from the *Times*, he advised that the line should be constructed with Chinese capital, men, and materials. Li, at any rate, does not intend to pay any attention to this recommendation of his colleague, for he has already transferred the whole foreign staff of the existing Maiping-Tientsin line to the new railway. It is reported that he has no intention of borrowing any large sum abroad, but that he will borrow for the purpose of constructing each successive section. He is about to conclude arrangements for a five-per-cent loan of five million taels, or, roughly, a million and a quarter sterling, for the first section. He is also said to have invited the co-operation of Tong King-Sing, the greatest of Chinese merchants, who has already been identified with the viceroy in the development of the Kaiping coal mines, and in various other large mercantile enterprises. The abandonment of Li Hung Chang's favourite scheme of an extension of the Tientsin line to Tungchow, near Peking, is now understood to have been due to the hostility of a crowd of officials in the capital who make large illicit profits by the transport of the tribute rice from the Yangtsze provinces between Tientsin and Peking. The viceroy was defeated, and if he accepted the defeat it was only *reculer pour mieux sauter*.

"It is scarcely necessary to point out that the edict which we print above marks a new era in the history of China. The existing railway was smuggled in, as it were. It was first a tram-line to carry coals from the Kaiping mines to the banks of a neighbouring canal. Then an enterprising young engineer put an engine on it, and a few years ago a correspondent of the *Times*, writing from North China, gave an amusing account of the manner in which he succeeded in inducing the Mandarins, his official superiors, to permit their august persons to be conveyed by the steam monster. Gradually the line became familiar in the locality; it attracted Li's attention, it was extended little by little stealthily, until at last it reached Tientsin. It was never liked at Peking, and its extension was successfully opposed; but now the Emperor solemnly declares it to be his opinion that railways are essential to the power of the country, and in due time they will no doubt be extended as widely, if not so rapidly, as the telegraphs, which, in seven years, have spread all over the eighteen provinces, from the Pacific to the borders of Tibet, from the Amour to Tonquin."

A New Zealand Viaduct.—The Wingatui viaduct, on the New Zealand Government railways, has just been formally opened by Sir R. Stout, the Premier of the colony. It crosses a deep ravine known as Mullocky Gully. The length of the viaduct is 690ft., and there are eight spans, three of 106ft. each, and five of 66ft. each. The piers next to the abutments are of concrete; and the others, five in number, are of malleable iron, resting on foundation blocks of concrete and masonry. The girders are of malleable iron of the usual construction. The total height of the bridge from the creek bed to the level of the top of the buttress is 154ft. 8in. There are 3,850 cubic yards of masonry and rubble in the bridge, and 574 tons of iron. The cost of the work was £22,000. The masonry was erected by Messrs. Black and Allison, their contract being about £8,000. The ironwork was supplied by Messrs. R. S. Sparrow and Co., and cost about £14,000. The smaller girders were built in their places, but the main girders were built on the ground and raised by hydraulic presses specially designed and made by Messrs. Sparrow and Co. The girders weigh 40 tons each.—*Engineering.*

The Strophanthus Plant.—Colonel Hawes has sent home the following account of this plant (native name *Kombe*), which grows in the Nyassa region: "Strophanthus is considered the most powerful poison the natives possess. It is found at a low level, and, as far as I can gather from personal observation and native sources, is not to be had on the high land. The supplies hitherto obtained have been drawn from the right bank of the river Shiré below the Murchison Rapids. There is, apparently, more than one species, or at least variety, the distinguishing feature being a much smaller pod and fewer seeds. At present information relative to these other varieties is scant. The strophanthus is a strong climbing plant, and is always found in the vicinity of high trees, on which it supports itself. The stem varies in diameter, but has an average of a few inches. It lies on the ground in folds, the branches supporting themselves on the nearest trees. The young branches have a rod-like habit, and are in appearance not unlike elder. The fruit grows in pairs, and has a peculiar appearance, very like a pair of immense horns hanging to a slender twig. The fruit begins to ripen in July, and lasts till the end of September. Judging from the few plants I have reared here, it would appear to be a strong growing plant. The natives are quite ignorant of its age, or how old a plant may be before it bears fruit. The native method of preparing the poison is very simple. They first clean the seeds of their hairy appendages, and then pound them in a mortar until they have reduced them to a pulp. A little water is then added. This is done by using the bark of a tree containing a gummy substance, which helps to keep the poison on the arrow in the event of its striking against a bone. The poison thus prepared is spread upon the arrow, and allowed to dry. Game wounded by arrow poisoned with strophanthus die quickly. The flesh is eaten without evil effect. The only precaution taken is to squeeze the juice of the baobab bark on the wound made by the arrow, and this counteracts the evil effect of the poison. Buffalo and all smaller game are killed by this poison."

THE CHARTER OF INCORPORATION OF THE BRITISH SOUTH AFRICA COMPANY.

VICTORIA by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, Defender of the Faith.

To all to whom these presents shall come, greeting:

Whereas a humble petition has been presented to us in our Council by the Most Noble James, Duke of Abercorn, companion of the Most Honourable Order of the Bath; the Most Noble Alexander William George, Duke of Fife, knight of the Most Ancient and Most Noble Order of the Thistle, Privy Councillor; the Right Honourable Edric Frederick, Lord Gifford, V.C.; Cecil John Rhodes, of Kimberley, in the Cape Colony, member of the Executive Council and of the House of Assembly of the Colony of the Cape of Good Hope; Alfred Beit, of 29, Holborn Viaduct, London, merchant; Albert Henry George Grey, of Howick, Northumberland, esquire; and George Cawston, of 18, Lennox Gardens, London, esquire, barrister-at-law.

And whereas the said petition states amongst other things:—

That the petitioners and others are associated for the purpose of forming a company or association, to be incorporated, if to us should seem fit, for the objects in the said petition set forth, under the corporate name of "The British South Africa Company."

That the existence of a powerful British company, controlled by those of our subjects in whom we have confidence, and having its principal field of operations in that region of South Africa lying to the north of Bechuanaland and to the west of Portuguese East Africa, would be advantageous to the commercial and other interests of our subjects in the United Kingdom and in our colonies.

That the petitioners desire to carry into effect divers concessions and agreements which have been made by certain of the chiefs and tribes inhabiting the said region, and such other concessions, agreements, grants, and treaties as the petitioners may hereafter obtain within the said region or elsewhere in Africa, with the view of promoting trade, commerce, civilisation, and good government (including the regulation of liquor traffic with the natives) in the territories which are or may be comprised or referred to in such consessions, agreements, grants, and treaties as aforesaid.

That the petitioners believe that if the said concessions, agreements, grants, and treaties can be carried into effect, the condition of the natives inhabiting the said territories will be materially improved and their civilisation advanced, and an organisation established which will tend to the suppression of the slave trade in the said territories, and to the opening up of the said territories to the immigration of Europeans, and to the lawful trade and commerce of our subjects and of other nations.

That the success of the enterprise in which the petitioners are engaged would be greatly advanced if it should seem fit to us to grant them our royal charter of incorporation as a British company under the said name or title, or such other name or title, and with such powers as to us may seem fit, for the purpose of more effectually carrying into effect the objects aforesaid.

That large sums of money have been subscribed for the purposes of the intended company by the petitioners and others, who are prepared also to subscribe or to procure such further sums as may hereafter be found requisite for the development of the said enterprise, in the event of our being pleased to grant to them our royal charter of incorporation as aforesaid.

Now, therefore, we having taken the said petition into our royal consideration in our Council, and being satisfied that the intentions of the petitioners are praiseworthy and deserve encouragement, and that the enterprise in the petition described may be productive of the benefits set forth therein, by our prerogative royal and of our especial grace, certain knowledge, and mere motion, have constituted, erected, and incorporated, and by this our charter for us and our heirs and royal successors do constitute, erect, and incorporate into one body politic and corporate, by the name of "The British South Africa Company," the said James Duke of Abercorn, Alexander William George Duke of Fife, Edric Frederick Lord Gifford, Cecil John Rhodes, Alfred Beit, Albert Henry George Grey, and George Cawston, and such other persons and such bodies as from time to time become and are members of the body politic and corporate by these presents constituted, erected, and incorporated with perpetual succession and a common seal, with power to break, alter, or renew the same at discretion, and with the further authorities, powers, and privileges conferred, and subject to the conditions imposed by this our charter; and we do hereby accordingly will, ordain, give, grant, constitute, appoint, and declare as follows (that is to say):—

1. The principal field of the operations of The British South Africa Company (in this our charter referred to as "the company") shall be the region of South Africa lying immediately to the north of British Bechuanaland, and to the north and west of the South African Republic, and to the west of the Portuguese dominions.

2. The company is hereby authorised and empowered to hold, use, and retain for the purposes of the company and on the terms of this our charter, the full benefit of the concessions and agreements made as aforesaid, so far as they are valid, or any of them, and all interests, authorities, and powers comprised or referred to in the said concessions and agreements. Provided always that nothing herein contained shall prejudice or affect any other valid and subsisting concessions or agreements which may have been made by any of the chiefs or tribes aforesaid. And in particular nothing herein contained shall prejudice or affect certain concessions, granted in and subsequent to the year 1880, relating to the territory usually known as the district of the Tati, nor shall anything herein contained be construed as giving any jurisdiction, administrative or otherwise, within the said district of the Tati, the limits of which district are as follows, viz.: from the place where the Shasi river rises to its junction with the Tati and Ramaquaban rivers, thence along the Ramaquaban river to where it rises, and thence along the watershed of those rivers.

3. The company is hereby further authorised and empowered, subject to the approval of one of our principal Secretaries of State (herein referred to as "our Secretary of State"), from time to time, to acquire, by any concession, agreement, grant, or treaty, all or any rights, interests, authorities, jurisdictions, and powers of any kind or nature whatever, including powers necessary for the purposes of government and the preservation of public order in or for the protection of territories, lands, or property comprised or referred to in the concessions and agreements made as aforesaid or affecting other territories, lands, or property in Africa, or the inhabitants thereof, and to hold, use, and exercise such territories, lands, property, rights, interests, authorities, jurisdictions, and powers respectively for the purposes of the company and on the terms of this our charter.

4. Provided that no powers of government or administration shall be exercised under or in relation to any such last-mentioned concession, agreement, grant, or treaty, until a copy of such concession, agreement, grant, or treaty, in such form and with such

maps or particulars as our Secretary of State approves verified as he requires, has been transmitted to him, and he has signified his approval thereof either absolutely or subject to any conditions or reservations. And provided also that no rights, interests, authorities, jurisdictions, or powers of any description shall be acquired by the company within the said district of the Tati, as hereinbefore described, without the previous consent in writing of the owners for the time being of the concessions above referred to relating to the said district, and the approval of our Secretary of State.

5. The company shall be bound by and shall fulfil all and singular the stipulations on its part contained in any such concession, agreement, grant, or treaty as aforesaid, subject to any subsequent agreement affecting those stipulations approved by our Secretary of State.

6. The company shall always be and remain British in character and domicile, and shall have its principal office in Great Britain, and the company's principal representative in South Africa, and the directors shall always be natural born British subjects, or persons who have been naturalised as British subjects by or under an Act of Parliament of our United Kingdom ; but this article shall not disqualify any person nominated a director by this our charter, or any person whose election as a director shall have been approved by our Secretary of State, from acting in that capacity.

7. In case at any time any difference arises between any chief or tribe inhabiting any of the territories aforesaid and the company, that difference shall, if our Secretary of State so require, be submitted by the company to him for his decision, and the company shall act in accordance with such decision.

8. If at any time our Secretary of State thinks fit to dissent from or object to any of the dealings of the company with any foreign power, and to make known to the company any suggestion founded on that dissent or objection, the company shall act in accordance with such suggestion.

9. If at any time our Secretary of State thinks fit to object to the exercise by the company of any authority, power, or right within any part of the territories aforesaid, on the ground of there being an adverse claim to or in respect of that part, the company shall defer to that objection until such time as any such claim has been withdrawn or finally dealt with or settled by our Secretary of State.

10. The company shall, to the best of its ability, preserve peace and order in such ways and manners as it shall consider necessary, and may with that object make ordinances (to be approved by our Secretary of State), and may establish and maintain a force of police.

11. The company shall, to the best of its ability, discourage, and, so far as may be practicable, abolish by degrees, any system of slave trade or domestic servitude in the territories aforesaid.

12. The company shall regulate the traffic in spirits and other intoxicating liquor within the territories aforesaid, so as, as far as practicable, to prevent the sale of any spirits or other intoxicating liquor to any natives.

13. The company as such, or its officers as such, shall not in any way interfere with the religion of any class or tribes of the peoples of the territories aforesaid, or of any of the inhabitants thereof, except so far as may be necessary in the interests of humanity, and all forms of religious worship or religious ordinances may be exercised within the said territories, and no hindrance shall be offered thereto except as aforesaid.

14. In the administration of justice to the said peoples or inhabitants, careful regard shall always be had to the customs and laws of the class, or tribe, or nation to which the parties respectively belong, especially with respect to the holding, possession, transfer, and disposition of land and goods, and testate or intestate succession thereto,

and marriage, divorce, and legitimacy, and other rights of property and personal rights, but subject to any British laws which may be in force in any of the territories aforesaid, and applicable to the peoples or inhabitants thereof.

15. If at any time our Secretary of State thinks fit to dissent from or object to any part of the proceedings or system of the company, relative to the peoples of the territories aforesaid, or to any of the inhabitants thereof, in respect of slavery or religion, or the administration of justice, or any other matter, he shall make known to the company his dissent or objection, and the company shall act in accordance with his directions duly signified.

16. In the event of the company acquiring any harbour or harbours, the company shall freely afford all facilities for or to our ships therein, without payment, except reasonable charges for work done, or services rendered, or materials or things supplied.

17. The company shall furnish annually to our Secretary of State, as soon as conveniently may be after the close of the financial year, accounts of its expenditure for administrative purposes, and of all sums received by it by way of public revenue, as distinguished from its commercial profits, during the financial year, together with a report as to its public proceedings and the condition of the territories within the sphere of its operation. The company shall also, on or before the commencement of each financial year, furnish to our Secretary of State an estimate of its expenditure for administrative purposes, and of its public revenue (as above defined) for the ensuing year. The company shall, in addition, from time to time furnish to our Secretary of State any reports, accounts, or information with which he may require to be furnished.

18. The several officers of the company shall, subject to the rules of official subordination and to any regulations that may be agreed upon, communicate freely with our High Commissioner in South Africa and any others our officers who may be stationed within any of the territories aforesaid, and shall pay due regard to any requirements, suggestions, or requests which the said High Commissioner or other officers shall make to them, or any of them, and the company shall be bound to enforce the observance of this article.

19. The company may hoist and use on its buildings and elsewhere in the territories aforesaid, and on its vessels, such distinctive flag indicating the British character of the company as our Secretary of State and the Lords Commissioners of the Admiralty shall from time to time approve.

20. Nothing in this our charter shall be deemed to authorise the Company to set up or grant any monopoly of trade; provided that the establishment of or the grant of concessions for banks, railways, tramways, docks, telegraphs, waterworks, or other similar undertakings, or the establishment of any system of patent or copyright approved by our Secretary of State, shall not be deemed monopolies for this purpose. The company shall not, either directly or indirectly, hinder any company or persons who now are or hereafter may be lawfully and peaceably carrying on any business concern or venture within the said district of the Tati hereinbefore described, but shall by permitting and facilitating transit by every lawful means to and from the district of the Tati, across its own territories, or where it has jurisdiction in that behalf, and, by all other reasonable and lawful means, encourage, assist and protect all British subjects who now are or hereafter may be lawfully and peaceably engaged in the prosecution of a lawful enterprise within the said district of the Tati.

21. For the preservation of elephants and other game, the company may make such other regulations and (notwithstanding anything hereinbefore contained) may impose such licence duties on the killing or taking of elephants or other game as they think fit. Provided that nothing in such regulations shall extend to diminish or interfere with any hunting rights which may have been or may hereafter be reserved

to any native chiefs or tribes by treaty, save so far as any such regulations may relate to the establishment and enforcement of a close season.

22. The company shall be subject to and shall perform and undertake all the obligations contained in or undertaken by ourselves, under any treaty agreement or arrangement between ourselves, and any other state or power whether already made or hereafter to be made. In all matters relating to the observance of this article, or to the exercise within the company's territories for the time being, of any jurisdiction exercisable by us under the Foreign Jurisdiction Acts, the company shall conform to and observe and carry out all such directions as may from time to time be given in that behalf by our Secretary of State, and the company shall appoint all necessary officers to perform such duties, and shall provide such courts and other requisites as may from time to time be necessary for the administration of justice.

23. The original share capital of the company shall be £1,000,000, divided into 1,000,000 shares of £1 each.

24. The company is hereby further specially authorised and empowered for the purposes of this our charter from time to time—

(i) To issue shares of different classes or descriptions, to increase the share capital of the company, and to borrow moneys by debentures or other obligations.

(ii) To acquire and hold, and to charter or otherwise deal with, steam vessels and other vessels.

(iii) To establish or authorise banking companies and other companies and undertakings or associations of every description, for purposes consistent with the provisions of this our charter.

(iv) To make and maintain roads, railways, telegraphs, harbours, and any other works which may tend to the development or improvement of the territories of the company.

(v) To carry on mining and other industries, and to make concessions of mining, forestal, or other rights.

(vi) To improve, develop, clear, plant, irrigate, and cultivate any lands included within the territories of the company.

(vii) To settle any such territories and lands as aforesaid, and to aid and promote immigration.

(viii) To grant lands for terms of years or in perpetuity, and either absolutely or by way of mortgage or otherwise.

(ix) To make loans or contribution, of money or money's worth, for promoting any of the objects of the company.

(x) To acquire and hold personal property.

(xi) To acquire and hold (without licence in mortmain or other authority than this our charter) lands in the United Kingdom, not exceeding five acres in all, at any one time, for the purposes of the offices and business of the company, and (subject to any local law) lands in any of our colonies or possessions and elsewhere, convenient for carrying on the management of the affairs of the company, and to dispose from time to time of any such lands when not required for that purpose.

(xii) To carry on any lawful commerce, trade, pursuit, business, operations, or dealing whatsoever in connection with the objects of the company.

(xiii) To establish and maintain agencies in our colonies and possessions, and elsewhere.

(xiv) To sue and be sued by the company's name of incorporation, as well in our courts in our United Kingdom, or in our courts in our colonies or possessions, or in our courts in foreign countries or elsewhere.

(xv) To do all lawful things incidental or conducive to the exercise or enjoyment of the rights, interests, authorities, and powers of the company in this our charter expressed or referred to, or any of them.

25. Within one year after the date of this our charter, or such extended period as may be certified by our Secretary of State, there shall be executed by the members of the company for the time being a deed of settlement, providing so far as necessary for—

(i) The further definition of the objects and purposes of the company.

(ii) The classes or descriptions of shares into which the capital of the company is divided, and the calls to be made in respect thereof, and the terms and conditions of membership of the company.

(iii) The division and distribution of profits.

(iv) General meetings of the company; the appointment by our Secretary of State (if so required by him) of an official director, and the number, qualification, appointment, remuneration, rotation, removal, and powers of directors of the company, and of other officers of the company.

(v) The registration of members of the company, and the transfer of shares in the capital of the company.

(vi) The preparation of annual accounts to be submitted to the members at a general meeting.

(vii) The audit of those accounts by independent auditors.

(viii) The making of bye-laws.

(ix) The making and using of official seals of the company.

(x) The constitution and regulation of committees or local boards of management.

(xi) The making and execution of supplementary deeds of settlement.

(xii) The winding up (in case of need) of the company's affairs.

(xiii) The government and regulation of the company and of its affairs.

(xiv) Any other matters usual or proper to be provided for in respect of a chartered company.

26. The deed of settlement shall, before the execution thereof, be submitted to and approved by the lords of our council, and a certificate of their approval thereof, signed by the clerk of our council, shall be endorsed on this our charter, and be conclusive evidence of such approval, and on the deed of settlement, and such deed of settlement shall take effect from the date of such approval, and shall be binding upon the company, its members, officers, and servants, and for all other purposes whatsoever.

27. The provisions of the deed of settlement, or of any supplementary deed, for the time being in force, may be from time time repealed, varied, or added to by a supplementary deed, made and executed in such manner as the deed of settlement prescribes. Provided that the provisions of any such deed, relative to the official director, shall not be repealed, varied, or added to without the express approval of our Secretary of State.

28. The members of the company shall be individually liable for the debts, contracts, engagements, and liabilities of the company to the extent only of the amount, if any, for the time being unpaid, on the shares held by them respectively.

29. Until such deed of settlement as aforesaid takes effect, the said James Duke of Abercorn shall be the president; the said Alexander William George Duke of Fife shall be vice-president; and the said Edric Frederick Lord Gifford, Cecil John Rhodes, Alfred Beit, Albert Henry George Grey, and George Cawston, shall be the directors of the company; and may, on behalf of the company, do all things necessary or proper to be done under this our charter, by or on behalf of the company. Provided always that, notwithstanding anything contained in the deed of settlement of the company, the said James Duke of Abercorn, Alexander William George Duke of Fife, and

Albert Henry George Grey, shall not be subject to retire from office in accordance with its provisions, but shall be and remain directors of the company until death, incapacity to act, or resignation, as the case may be.

30. And we do further will, ordain, and declare that this our charter shall be acknowledged by our governors, and our naval and military officers, and our consuls, and our other officers in our colonies and possessions, and on the high seas and elsewhere, and they shall severally give full force and effect to this our charter, and shall recognise and be in all things aiding to the company and its officers.

31. And we do further will, ordain, and declare that this our charter shall be taken, construed, and adjudged in the most favourable and beneficial sense for, and to the best advantage of, the company as well in our courts in our United Kingdom, and in our courts in our colonies or possessions, and in our courts in foreign countries or elsewhere, notwithstanding that there may appear to be in this our charter any non-recital, mis-recital, uncertainty, or imperfection.

32. And we do further will, ordain, and declare that this our charter shall subsist and continue valid, notwithstanding any lawful change in the name of the company or in the deed of settlement thereof, such change being made with the previous approval of our Secretary of State signified under his hand.

33. And we do further will, ordain, and declare that it shall be lawful for us, our heirs and successors, and we do hereby expressly reserve to ourselves, our heirs and successors, the right and power, by writing under the great seal of the United Kingdom, at the end of 25 years from the date of this our charter, and at the end of every succeeding period of ten years, to add, to alter, or repeal any of the provisions of this our charter, or to enact other provisions in substitution for, or in addition to, any of its existing provisions. Provided that the right and power thus reserved shall be exercised only in relation to so much of this our charter as relates to administrative and public matters. And we do further expressly reserve to ourselves, our heirs and successors, the right to take over any buildings or works belonging to the company, and used exclusively or mainly for administrative or public purposes, on payment to the company of such reasonable compensation as may be agreed, or as, failing agreement, may be settled by the Commissioners of our Treasury. And we do further appoint, direct, and declare that any such writing under the said great seal shall have full effect, and be binding upon the company, its members, officers, and servants, and all other persons, and shall be of the same force, effect, and validity as if its provisions had been part of and contained in these presents.

34. Provided always and we do further declare that nothing in this our charter shall be deemed or taken in anywise to limit or restrict the exercise of any of our rights or powers with reference to the protection of any territories, or with reference to the government thereof, should we see fit to include the same within our dominions.

35. And we do lastly will, ordain, and declare, without prejudice to any power to repeal this our charter by law belonging to us, our heirs and successors, or to any of our courts, ministers, or officers, independently of this present declaration and reservation, that in case at any time it is made to appear to us in our council that the company has substantially failed to observe and conform to the provisions of this our charter, or that the company is not exercising its powers under the concessions, agreements, grants, and treaties aforesaid, so as to advance the interests which the petitioners have represented to us to be likely to be advanced by the grant of this our charter, it shall be lawful for us, our heirs and successors, and we do hereby expressly reserve and take to ourselves, our heirs and successors, the right and power by writing under the great seal of our United Kingdom to revoke this our charter, and to revoke and annul the privileges, powers, and rights hereby granted to the company.

In witness whereof we have caused these our letters to be made patent.

Witness ourself at Westminster, the 29th day of October, in the fifty-third year of our reign.

By warrant under the Queen's sign manual.

The
Great Seal
of the
United
Kingdom.

MUIR MACKENZIE.

English History as Read in Geography, by the Rev. J. P. Whitney, M.A. (read to the Members, in the Library, December 15, 1889).—He desired to bring before them some aspects of the history of our country which was, or ought to be, dear to every one of them, and if he could persuade them that the study of history and geography could be combined in such a way that they could be made more living and not a mere dull list of names, but something instinct with life of the past and fuller significance for the present, then his lecture would not have been a fruitless one. What could they glean if they examined the face and features of our country? The first thing that struck them was that its true face was towards the south-east. Then they had some evidences of the foundation of the Romans. From the contemplation of sculls they were able to glean a great deal of the history of a country and of the habits of the races then inhabiting that country. The lecturer pointed out at length how the physical aspects of our country affected the distribution of races to a considerable extent. The east was the first part to be attacked and settled in, and races did not penetrate west so quickly owing to the physical characteristics of the land. The history of the country showed, however, a gradual pushing westward of the weaker races. Dialect gave them much information as to the country's history. Speaking of Roman civilisation, the lecturer said it did not affect the country districts, only the towns. Passing on to the English conquest, Mr. Whitney said its first result was that the earlier races were driven to the west. The effect of climate upon personal character had often been remarked upon, and it undoubtedly had a large effect upon the formation of the character, not only of individuals but nations. If they depicted the English nature according to the climate, it would be unflattering, but our climate was such that it strengthened our character. Our ancestors developed great self-reliance, and we knew well enough the difference between the energetic Englishman and the lazy Italian—that was due, to a great extent, to the difference in the climate of the two countries. Referring to the marking out of the country into so many parts, the lecturer said there must have been a great difference in the habits and characteristics of the people living in those parts, and that was why it was so difficult to make the people unite in one cause—there were so many local differences. In speaking of the Danes, the rev. gentleman said that invasion, which seemed a sign of weakness, was a source of strength. Much information could be gained by studying the names of streets, villas, and churches. Proceeding to touch on the names of counties, the lecturer said when the names of counties concluded with "bury, ham, and stone," when they found those names dated from an earlier time, they might be fairly sure that there English people settled. Nearly all the names in our country were purely English names, and the study of these names was found to confirm the results they had arrived at in another way. There was no doubt they owed a very valuable simplification of names to the Danish invaders. For instance, but for the Danes the Scarborough and Whitby Railway would have been Scarborough and Streonshalh Railway. The different invasions of population were all to be found written upon the actual face of the country. In concluding a most interesting and instructive lecture, Mr. Whitney said the general attitude with regard to the study of the history and geography of our country was one of unqualified indifference, and that was because people never remembered how much they were indebted to past history. When they took geography in connection with history, they found that the latter became much more connected with themselves and geography much more living. The lecturer ridiculed the manner of teaching these subjects formerly adopted in schools, and said it was no wonder that children considered both so wearisome. What they ought to do if they wished to make the study of history more living, and that of geography something to educate their senses, and teach them how to use their eyes and minds, was to bring the study of the history of our own land in connection with the study of our geography. The lecture was illustrated by several admirable maps.

The Portuguese in the Shiré Highlands.—The following is from the *Manchester Guardian:* Sir,—In view of the recently-reported statements with which Major Serpa Pinto is credited, I think it right to hand you for publication the following extract from advices which we have just received from our settlements in the Shiré Highlands. It gives a clear account of the procedure of the Portuguese officials. It will be seen that the Portuguese expedition crossed the boundary line of the Ruo, penetrated to Katungas, a long distance into the territory of the British protectorate, and there hauled down the British flag. It is not likely that European opinion will accept Major Serpa Pinto's assurance that too much is being made of these matters.

[EXTRACT.]

Katungas, 3rd January, 1890. About 1-30 p.m. on the 2nd inst. the news arrived that the Portuguese were coming, to test the truth of which Messrs. Wilson and Nash went over to the villiage Mwanza, and there met about one dozen of their soldiers, who on being asked what they wanted ran off, "taking with them a gun which was standing against a tree," with Messrs. Wilson, Nash, and several of the Makololo in pursuit, who followed them as far as the stream. They failed to recapture the gun. Mr. Wilson then returned to the station and sent off letters to Mr. Moir, and then again went to the village with MacCulloch and Nash. They had not been there very long when the full force of five hundred men arrived, followed by the leaders, Senhor Paiva and two half-castes. Paiva shook hands with them, and after a little said, "I see you have the English flag up there; can you show me a written permit from the Governor of the Shiré to have it flying?" Mr. Wilson replied that as it had been hoisted by the British Consul, and was on the ground of the English protectorate, no permit was necessary. He then said, "It is on Portuguese ground, and I request you to take it down," which Mr. Wilson refused to do. He was very polite, and said he was of course only following his instructions. He again said, "I respectfully request you to take the flag down;" and after being refused again said, "Well, I proceed to do so." Mr. Wilson told him that as he had might on his side of course he could not prevent him. He then hauled down the red ensign, amid a salute of twenty one guns and the "Boo, boo, boo" of his soldiers, and then in its place hoisted the Portuguese flag amid another salute of twenty one guns. Mr. Wilson was then requested to haul down the flag at the station, which he refused to do. Then Paiva hauled it down and offered it to Messrs. Wilson, Nash, MacCulloch separately, all refusing to take it. Mr. Wilson told him that he could keep it, and that we would get it back with all the others when we were hoisting them up again. They then had a long talk about things, Paiva saying that he could not say if he was going to Blantyre, but he had applied for three months' leave in order to visit Lake Nyassa. He also asked the distance to Chirala. He said he was going to leave sixty men in possession of the village, and he then left in a canoe, and it turned out later that he had left all his men with the exception of one or two, who had gone in the canoe with him. He also left word that he would be at Masca's village until 10-30 a.m. the next day. Sixteen women are now in Katungas station in terror of their lives. The boys say they will kill all Portuguese found singly. They say we tell them not to fight, then leave them, and let the Portuguese do what they like. A native report says that they will make a stand at Chirala, as it is the last chance, and they can only be beaten, in which case they will be no worse off than now.

Further facts might be adduced of other actions of this so-called scientific expedition of the Portuguese, but the foregoing will in the meantime suffice for the present case in point. It is added in our advices from Mandala that the chiefs there could not have behaved better than they have done. They had gathered into Mandala and Blantyre, and were waiting for the protection of this country, which Lord Salisbury has so efficiently and reasonably sustained.—I am, &c., WILLIAM EWING, Secretary African Lakes Company, Limited. March 25, 1890.

THE HARDY NORSEMEN.*

[Read to the Members in the Library, December 15th, 1889.]

IT is twenty-eight years since M. Du Chaillu startled an incredulous world with the story of his adventures in a land whose forests are the home of a surviving cousin of our remotest ancestors. No less startling to many will be his latest discovery that the English-speaking peoples are the descendants, not of the supposed Teutonic "Angles and Jutes and Saxons," but of the ruthless Vikings, those hardy Norsemen who "bravely fought like heroes bold, and ruled the stormy sea." M. Du Chaillu's statements about the gorilla have long ago been confirmed and accepted by men of science. It may in the end turn out that there is a large grain of truth in the position he takes up with regard to the ancestors of the English-speaking nations. Some of his contentions probably no one will seek to deny. He maintains that the conquest of a great island country like Britain must have been accomplished by a people accustomed to navigation, and with ships numerous and large enough to convey great bodies of warriors and colonists. The only people he can find in the earlier centuries of our era who were in this position were the Scandinavians, whereas the so-called Germanic people, the people described by the Roman historians, had, according to M. Du Chaillu, no fleets at all. But the position taken up by what may be called the orthodox English historian is that the people who effected the conquest of Britain, after the Romans left, came from the south of that peninsula which is now essentially Scandinavia, and the districts to the south and south-east of that. The evidence for this is so clear that it will take a good deal to refute it. True, these people may have filtered downwards from the north, and have been essentially of the same type as the Scandinavian. The one difficulty, however, is language. As far back as we can go we find that the earlier forms of what became English were unlike, in several important respects, what the Scandinavian is now and has been since we knew it, and much more like its southern sister the German. But no one will deny that both in quantity and quality the Norse element in England and in Scotland is very powerful; that Northmen must have been crossing and settling on our east coasts, at least in the north, from a very early period, probably even before "Hengist and Horsa;" and that, not long after the date usually assigned to these heroes, the Danes, or Vikings, or Norsemen, came over in ever-increasing numbers, and that the British seas for long before the Norman Conquest swarmed with their formidable ships. But to enter into anything like a critical examination of the position taken up by M. Du Chaillu would occupy far more space than can be spared here. M. Du Chaillu is nothing if not original. He was daring enough a few years ago to write a book on the "Land of the Midnight Sun," which had all the freshness af a narrative of original discovery, and that partly because the author abstained from reading other books, and spent seven years in the country in the same inquisitive way that he did in Central Africa. It is evident, also, from this new book, that he has approached the subject unbiassed by the study of the mass of literature that has been produced in connection with it, which some may consider a doubtful advantage. He tells us that he was impelled to his inquiry by finding that over every region of the globe the spread of the English-speaking people and of their language far exceeds that of all the other European nations combined. "Wherever the English-speaking people have settled, or are at this day found, even in small numbers, they are far more energetic, daring, adventurous, and prosperous, and understand the art of self-government and of ruling alien peoples far better than other colonising nations." In M. Du Chaillu's view we must look for the ancestors of the widespread people whom he has so happily and flatteringly characterised, not among the poor-spirited Britons whom the Romans left behind them, not among those so-called Germanic nations whom he tells us the Romans wrote of as savages who had scarcely a single ship, but among those Scandinavian Vikings who, although merciless in invasion and battle, had ships by thousands, an elaborate social and political system, were skilful in the arts, were rich beyond conception in elaborately-wrought ornaments, implements, and weapons, in gold, and silver, and iron, and copper, had their swords damascened and their brooches enamelled, who even in the ninth century could venture as far as Iceland, and discovered America 400 years before Columbus. Scandinavian writers have gone into all this, but the English public have much to learn on a subject which to them ought to be of large interest. It is not necessary to go as far as M. Du Chaillu in order to believe that we and our kinsmen all over the world are inheritors to a large extent of this primitive vigour and early civilisation, and to feel a keen interest in its characteristics and origin. This latter point, it seems to us, has still to be worked out, though the general opinion seems to be that we must look for it on the shores of the Black Sea. But the truth is that what may be regarded as the controversial part of his book occupies but small space, mainly only the first three chapters. Still, even from the historical and ethnological standpoint, M. Du Chaillu's introductory chapters will have rendered a real service if they lead to an entire reinvestigation of the whole question of the origin and migrations of the leading races which now inhabit Europe and Asia. We have got into the habit, mainly from certain attractively-presented linguistic considerations, of looking for the home of the great Indo-European family in Central Asia, from which, according to the popular conception, they spread, wave after wave, as if by some preconcerted arrangement. The whole subject requires reconsideration, and that on a basis in which language should not play the supreme part it has hitherto taken. M. Du Chaillu's position receives some countenance from the new German school which is represented in this country by Professor Sayce and Canon Taylor, which would look for the home of the Aryans in Scandinavia and its neighbourhood, and would end by making us all to be "improved Fins." On the other side we have a corresponding school in France and in Portugal that is incredulous of the Italian origin of the languages spoken in the Iberian Peninsula, and would derive them rather from a stream that found its way south-west long before the Romans approached Hispania. All this shows that a movement is on foot to challenge popularly-accepted conclusions as to the origin and inter-relations of the existing European peoples, and to go into the whole subject afresh. To this movement M. Du Chaillu's work may give a considerable impetus.

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* "The Viking Age; the Early History, Manners, and Customs of the Ancestors of the English-Speaking Nations. Illustrated from the Antiquities discovered in Mounds, Cairns, and Bogs, as well as from the Ancient Sagas and Eddas." By Paul B. Du Chaillu. With 1,366 illustrations and map. Two vols. London, John Murray. 1889.

Meantime the general reader, who does not care to trouble his mind with such abstruse questions, but who is in search of entertainment and instruction, may be comforted with the fact that out of 1,100 pages M. Du Chaillu devotes only 26 to the discussion of his theory, and that all the rest consists of stories and pictures. True, these are meant to be illustrations and confirmations of the author's theory; and they are, in fact, the raw material on which he has built it, and which may form a mine for future workers. But this need not trouble the mind of the ordinary reader. What M. Du Chaillu has attempted to do is to give a full and detailed picture of the life of the hardy Norsemen, and a vivid impression of what he regards as their advanced civilisation. This he has done by bringing long extracts from their sagas and other literature alongside of illustrations of the remarkable and multitudinous archæological finds which have been discovered in graves and mounds and bogs. The great age of some of these finds has been abundantly proved; some of them go back to the early Stone Age (and, therefore, probably long before the Scandinavian era proper), and in the later stone and the copper age the artistic quality of some of the work is remarkable. With regard to the sagas—and some of them have never before been translated into English—M. Du Chaillu prefixes a list of them, which he quotes, with dates, so that any one may estimate for himself what is the value of the extracts which he gives, so far as proving the antiquity of the Norse civilisation is concerned. As far as possible, too, the dates of the various objects which are shown in the pictures are given, so that any one who chooses may draw his own conclusions, independent of those of the author. Indeed the author, after the first three chapters, keeps pretty well in the background. He is like the showman of a panorama; he unfolds one scene after another of his long series of pictures of the life and ways and manners of these daring men of old, and contents himself with reciting passages from their own bards and story-tellers bearing on the particular pictures. Indeed the actual illustrations fill a very large part of the book, and one may turn over page after page of pictures with no text upon them except the titles of the illustrations and a statement as to where the objects were found. In this way considerable entertainment can be obtained, and not a little information, without much exertion.

The frontispiece to the first volume is an illustration of the remarkably well-preserved Viking ship found at Gokstad, Norway, a few years ago; while to the second volume is prefixed a picture of an old Norse chariot, of beautiful workmanship. As one looks through the volumes at the multitude of illustrations, from the pottery and weapons and ornaments of the stone and bronze ages down to the time when iron ruled the day, one cannot but wonder how it was that such a civilisation grew up so comparatively early in a remote country like Scandinavia. It is not necessary to believe that their finely-ornamented bronze vessels, gold ornaments, and damascened swords were actually manufactured among themselves to infer that they must have reached a high stage of civilisation; the mere fact that such articles found a market there would lead to the same conclusion. And the number of early Roman and Greek coins found in graves and bogs, together with other articles, prove that the Vikings must at an early period have been in contact with Southern Europe. That at least at a later period their vessels scoured the Mediterranean is, of course, beyond dispute, and that in the eighth to the eleventh centuries they made their way up the great European rivers, carrying consternation and havoc wherever they went. The vivid narrative of the Siege of Paris, which M. Du Chaillu quotes in the appendix, affords a striking idea of the organisation of the Viking expeditions, and the elaborate way in which they went to work.

M. Du Chaillu does not attempt to give any connected history of the events of the Viking Age; that is evidently not the purpose of his book. It is, indeed, a book which may be opened at any chapter; its great object, as has been indicated, is to let the sagas and the archæology tell their own story as to the character and the customs of those men who have contributed so important an element to English ethnology. The copious extracts from the *Voluspa*, the *Grimnismal*, and other literary remains in the earlier chapters give, as it were, the raw material from which the striking mythology of the Vikings has been constructed. Several succeeding chapters are devoted to a description of the multitude of objects dating from the Stone Age, which have been found in graves and other places in Scandinavia. These chapters are richly illustrated, and the pictures themselves are enough to prove that these doughty warriors were not the ruthless savages which the monkish chronicles would make them out to be. Much of what remains of the first volume deals with many aspects of the life of the Norsemen, their religion, their superstitions, their laws, their elaborate regulations as to the land, their social organisation, slavery, their Parliament or "Thing," duelling, outlawry, and many other points. The second volume begins with a few chapters on the subject of marriages, births, and deaths; and the customs and regulations which bore on these important events in the life of a people were of the most elaborate kind. It is very curious to find that among these people, long before they came in contact with Christianity, a form of water-sprinkling or baptism prevailed for infants. First, however, they had to pass an ordeal which reminds one of the well-known Spartan custom; if the child did not satisfy the father that it was sound and healthy, it was exposed to die. This ordeal passed, the child was brought up with every care and attention; and the very man who would not hesitate to impale an enemy's child on his spear-point, would dandle his own with all the tenderness and fondness characteristic of the typical English parent. It was not only a weak constitution that led to the exposure of a newly-born child. Such reasons prevailed as discord between man and wife; dissatisfaction of the wife's father with the union of which the child was the fruit; persuasion of the wife if the husband got a child by a concubine; superstitions as to evil omens at the time of birth; and, finally, the utter inability of the parents to rear the child on account of their poverty. No violent hand, however, was laid on the child to be exposed. One custom was to put the child in a covered grave; but the most common was to leave the death or life of the child to fate, by exposing it in an out-of-the-way place; for instance, between heaped-up stones or in a hollow under the root of a tree, making it tolerably secure against wild animals. Even nourishment was sometimes given, in order to prolong the child's life in case anyone might possibly find it and take pity upon it.

As might be expected from men whose great business in life was war, everything connected therewith was carried to the greatest elaboration. The numerous illustrations of swords and of the various parts of swords in M. Du Chaillu's volumes are an interesting study. The most richly-carved and ornamented hilts and damascened blades are seen, while the scabbards and belts were quite in keeping. Axes and shields, and coats of mail, including even ring-mail, all were masterpieces of mechanical art. No wonder, then, that the sagas abound with the most graphic and even fond epithets for the great implement with which the Vikings did the work of their day and generation. After these chapters devoted to weapons, M. Du Chaillu naturally takes us to the war customs of the Norsemen, to their battle formations, and similar subjects. In connection with this subject, the remarkable rock-tracings found in Bohuslän, of which M. Du Chaillu gives illustrations, are of striking interest, especially when compared with the bas-relief from the temple of Medinet-Habou, in Egypt. Some of the points of similarity will strike the most casual observer, as will also the figures strongly resembling the camel, turtle, leopard, and other southern animals on the Norse tracings. M. Du Chaillu gives abundant illustrations of the ships of the Vikings, and has a chapter on their fleets, and another on the mode of warfare. One particularly interesting chapter is that which deals with trade and trading ships, and with the articles (richly illustrated) brought back to Scandinavia in these ships from abroad. The chapters on household arrangements ought to be popular, with their abundant illustrations of richly-carved panels and lintels, doors and chairs, and other household furniture. The various arrangements of the house are also brought out in numerous quotations, including questions of precedence, feasts, drinking bouts, and other such matters. The various chapters relating to women, their dress and ornaments (including those beautiful bracteates of which M. Du Chaillu gives so many illustrations), and occupations, and their position in the social economy of the Vikings, are sure to interest, all the more that they show the great respect in which these rough warriors held the sex. We see in the sports and amusements in which the hardy Norsemen indulged many of the early forms of games which are now common among all English-speaking peoples; while in the chapters on "Idróttir" (a word hardly translateable, as it means exercises of all kinds, physical and mental) it will be learned that intellectual power was also understood and respected. Not the least remarkable feature of the Viking Age is its wonderful store of what—for lack of a more precise name—we must call literature. Thus, we have the "Hávamál (the "Book of Proverbs" of the old Norsemen), with its many "wise saws" and shrewd hints as to the conduct of life. Here are a few examples of its wisdom:—

Thus is the love of women, whose hearts are false,
As riding on slippery ice with an unshod,
Wild, two-year-old, badly broken horse,
Or like cruising rudderless in a strong gale,
Or like the lame reindeer on thawing mountain sides.

. . . . .

Finely must talk and offer gifts
He who would win woman's love.
Praise the shape of the fair maiden,
He wins who woos.

. . . . .

A man must not blame another
For what is many men's weakness; for mighty love
Changes the sons of men from wise into fools.

Or again:—

An unwise man is awake all night
Worrying about everything; he is weary
When the morning comes, all the woe is as it was.

. . . . .

An unwise man when he comes among people
Had best be silent; no one knows
That he nothing knows, unless he talks too much.

Of course, it cannot be maintained that the "Hávamál" in its existing form belongs to the earliest Norse period.

The concluding chapters of M. Du Chaillu's volumes deal with some of the expeditions and deeds of great Vikings. They do not profess to give a continuous history of these expeditions; rather the author's object seems to be to give examples of the method in which the Norsemen went to work, and of the wide area over which their rovings extended. We have in these chapters the actual text descriptive of the early Norse expeditions to Greenland and the coast of North America by Eric the Red and his successors in the tenth and following centuries. These expeditions are often referred to. Here we have the story itself in all its details in the words of a story-teller almost contemporary; for Rafn's great volume is accessible to few. The same can hardly be said, of course, of many of the sagas quoted by M. Du Chaillu, which, though in origin they may be very old, were not written down till long after the events, and in the meantime had probably received many additions. But he may fairly claim, as he does, that they, on the whole, represent the conditions of life of the period to which they refer. Severe historical criticism might reduce the antiquity both of many of the finds and many of the quotations which fill M. Du Chaillu's volumes; but their value, as illustrative of the civilisation, character, and life of the early Vikings will remain the same—a value enhanced by the multitude of beautiful pictures, which alone ought to make the book attractive, and which alone are a worthy result of the eight years and a half which M. Du Chaillu has spent upon the work.—*Daily Telegraph.*

REVIEWS.

LONGMANS' NEW ATLAS. Edited by G. C. CHISHOLM, F.R.G.S., &c. 12s. 6d. *London: Longmans, Green, and Co.*

THIS is a political and physical Atlas, with fifty-five maps and sixteen plates illustrating the ethnology and natural history of the world. The meteorological, ethnographical, geological, and botanical maps have been especially prepared for this Atlas by experts. The system of index numbers in the margin is useful to a careful reader, but it is of doubtful value for use in schools. The maps have been engraved and lithographed by Mr. Stanford, and it is furnished with a satisfactory index of places. The Atlas is a great advance upon any school atlases we have had in English. The maps are not over-crowded with names of places, and are vigorously drawn and coloured. The illustrations in the sixteen plates are somewhat rough; but we welcome this attempt to give a picture of the earth which is of value. We trust the publishers may have encouragement in so bold a venture.

PHILIP'S IMPERIAL ATLAS OF THE WORLD. Eighty Maps, with Indexes to over 200,000 places. £8. *London and Liverpool: George Philip and Son.*

THIS Atlas has just been published, and contains a large amount of valuable information. Twenty-two out of the eighty maps are devoted to details of Great Britain and Ireland and her Colonies. Sixteen maps are illustrative of geographical science, viz.: six orographical, nine physical, one geological, and contour maps of the Atlantic and Mediterranean. The maps are drawn to a large scale, and are clearly executed with considerable minuteness. India is represented by four sheets, Africa by six, and America (North and South) by sixteen. It is a handsome book, and is a satisfactory magazine for reference.

H. M. STANLEY, THE AFRICAN EXPLORER. By ARTHUR MONTEFIORE, F.R.G.S. London: *S. W. Partridge and Co.*, N.D. Pp. 160. Price 1s. 6d.

THE book before us gives a brief but very readable account of Mr. H. M. Stanley, from his birth at Denbigh in 1840 until his arrival at Bonalya on the 17th of August, 1888. We are informed that Mr. Stanley's baptismal name is John Rollant, now spelt Rolands. A sketch of his early life is given, but we have no means of testing its accuracy. We have taken some trouble to examine the accounts of Stanley's African exploits given in this book, and find them to be accurate and well balanced. The author rarely falls into such mistakes as one we find on page 147, where, in speaking of Emin Pasha, he says that in 1886 Dr. Junker, the well-known traveller, reached Wadelai, bearing letters and newspapers for the beleagured pasha, the first he had received for three years. The portrait of Mr. Stanley, which forms the frontispiece, is a remarkably good one, but the map is wretched. The author has acknowledged his obligations to Mr. Stanley's own works, but we think a line or two might have been spared to acknowledge the sources of his other information and of his illustrations.—*Scottish Geographical Magazine.*

PROCEEDINGS OF THE SOCIETY

FROM OCTOBER 1st, 1889, TO DECEMBER 31st, 1889.

HUNDRED AND SIXTH MEETING

Of the Society, in the Memorial Hall, Wednesday, October 2nd, 1889, his lordship the **Bishop of Salford** in the chair.

Mr. J. T. **Arlidge**, M.D., addressed the members, and the members of the Statistical and other societies, " On the Effects of Manufacturing Processes in Relation to Health." (See pp. 305.)

The meeting was addressed by Dr. **Pankhurst**, Mr. **Marsden**, Mr. **Fogg**, and others, and questions were asked.

Dr. **Pankhurst** moved a vote of thanks to Dr. Arlidge, and Mr. F. J. **Faraday** seconded the motion, which was carried unanimously.

Dr. **Arlidge** replied to the questions asked, and requested co-operation in the study of the subject, thanked the meeting for their attention, and moved a vote of thanks to the chairman, which was seconded and carried. The Bishop responded.

HUNDRED AND SEVENTH MEETING

Of the Society, held in the Library, Friday, October 11th, 1889, at 7-30 p.m., Mr. **Mark Stirrup**, F.G.S., in the chair. The minutes of the following meetings were read and approved—June 26th (100th), 29th (101st), July 8th (102nd), 27th (103rd) August 9th (104th), 26th (105th), October 2nd (106th).

The election of the following members was announced :—

Life : Mr. William Hinmers, J.P.

Corresponding : Mr. J. F. Scott, Jun., Transvaal.

Ordinary: Messrs. W. J. Burton, Samuel Butler, D. R. Calvert, J. Dean, Richard Done, James Edmondson, Councillor A. Fletcher, Henry Grimston, J. Dilworth Harrison, Councillor W. T. Heap, Councillor J. S. Higham, Rev. A. Holliday, Charles Hooper, Edward Inman, J. J. T. Jackson, William Johnson (in lieu of associate), Mrs. Johnson, F. W. Maxwell, Miss Morton, Thomas Nesbitt, Joseph Nuttall, Joseph Oldham, William Oldham, Joseph Pennington, George Perry, P. Lloyd Rees, Edward Rothwell, John Thompson, J.P., Henry Thorp, Charles Henry Stott, Thomas Winstanley.

Associate—William Baker, John Bates, B.A., Thomas Batho, William Churchill, Jun., T. P. Cooper, Hugh Fullerton, N. H. Harris, Henry Holden, Charles Longworth, John Pollitt, Mrs. Provis, T. Richardson, A. Rushworth, W. A. Rushworth, Thomas Turnbull, Charles Wadsworth,

A large number of presentations of books, maps, &c., was reported to the meeting. (See Additions to Library, pp. 449.) Very hearty thanks to the respective donors were ordered to be sent by the secretary.

The following letters, in reply to letters of condolence formerly passed by the society, were read:—

From Mrs. John Slagg:

"39, Hertford Street, Mayfair.

"Mrs. Slagg returns thanks for kind sympathy."

From Mr. H. J. Roby:

"Woodhill, Pendleton, 29th September, 1889.

Dear Sir,—I beg to acknowledge the resolution of the Council of the Manchester Geographical Society, which you have been so good as to communicate to me. Pray convey to the council my thanks for their kind words and this act of sympathy in my great loss.—Yours very faithfully. (Signed) H. J. Roby."

"Eli Sowerbutts, Esq."

The Secretary then read an address to the members on "Recent Travels in Peru and Bolivia," by the Chevalier H. Guilluame, Consul General for Peru at Southampton. (See pp. 315.) The address was illustrated with a large map very kindly lent by the writer.

Some discussion ensued upon the paper:

Mr. H. Yule Oldham then read copious extracts from a paper, by Mr. R. E. Dennett, on the "Manners and Customs of the Congo Natives, and Notes of Travel on the Lower Congo."

The Reports of the Delegates to the meetings of the Yorkshire Mechanics' Institutes Union, held at Halifax, the British Association, held at Newcastle-on-Tyne, and the International Geographical Congress, held at Paris, were presented.

A conversation ensued, and the meeting broke up at a late hour. Thanks to the chairman closed the meeting.

REPORT OF THE DELEGATE

to the Annual Meeting of the Yorkshire Mechanics' Institutes Union, held at Halifax, June 19th, 1889.

The Conference took place in the Hall of the Mechanics' Institute. Sir Edward Baines presided, and addressed the delegates.

The official business was then dealt with.

Two items of interest are obvious: (1) The number of Institutes is increasing, being in 1888, 274, with an aggregate number of members of 58,100. (2) The great usefulness of the Village Library during the year 1888, the large number of 33,950 books having been issued.

The Examinations of the Union are important; but it is singular that there is not a single one in Geography, either general or commercial.

The Secretary of the Union attended 194 meetings during the year (including Lectures, Conferences, &c.), which seems to put a great strain upon that officer.

Mr. S. Smith, M.P., addressed the Conference on the subject of "Continuation Schools." The address was well received, and a brisk discussion ensued.

Mr. Reuss spoke to the Conference on "Home Arts and Industries; or, Cottage Industries in Relation to the Work of the Union." In the discussion it was interesting to find how much was being done by the smaller institutes in this direction.

At the evening meeting the Earl of CARLISLE occupied the Chair, and gave an address of great value on "Art."

The next day the Members had an excursion to the Widdop Reservoir of the Halifax Corporation, and to Hardcastle Craggs.

This journey from Hebden Bridge is a remarkable one; and the delegate trusts our members may have an opporlunity of seeing this magnificent district.

The delegates were received with the usual splendid hospitality of Yorkshiremen, and left Halifax with very kindly feelings towards their hosts.

HALIFAX WATER WORKS.

Councillor FOSTER kindly supplied the following note on the Water Works, which will have interest for our members :—

The Waterworks derive their supply from five separate valleys: The Hebble, Luddenden, Widdop, Greave, Walshaw Dean. The Ogden Reservoir is at the head of the Hebble stream, holds 221,806,000 gallons, 990,000 of which are sent down the stream daily. The conduit passes through Mixenden to Ramsden Wood, thence to Halifax. Mixenden Reservoir holds 106,121,000 gallons. Ramsden Wood Reservoir holds 11,700,006 gallons. The Service Reservoirs of the town are—

	A.	R.	P.	DEPTH.	GALLONS.
Albert	7	2	25	14½ feet	27,501,143
Victoria	2	3	30	14½ "	12,283,953
Royles Head	1	1	36	22 "	5,985,000
Hanson Lane	0	3	37	11 "	3,290,454
Gibbit Hill		—		—	34,207

STORAGE.

	A.	R.	P.	DEPTH.	GALLONS.
Widdop	93	0	29	65 feet	640,510,771
Warley Moor	67	3	30	30 "	193,250,587
Dean Head	9	2	33	54¾ "	59,142,694
" "	9	2	37	60 "	63,011,690
Castle Carr	1	1	8	19 "	4,500,000
Ogden	35	0	32	66 "	221,806,174
Mixenden	21	3	5	30 "	106,121,782
Ramsden Wood	3	0	27	22 "	11,699,751

The compensation water from the Luddenden stream is 1,440,000 gallons per day mostly from Warley Moor Reservoir. Compensation from Widdop, 1,620,000 gallons. The Walshaw Dean Reservoirs yet to make are three, equal to Widdop. The water from all the five Valleys is brought to Ramsden Wood. The whole line of the conduit resembles a tree, the main trunk being the conduit from Ramsden Wood to Halifax, the branches to Ogden, &c., &c.

The drainage area is chiefly moorland or high mountain pasture, and of the millstone grit formation. The Dean Head and Castle Carr Reservoirs are near a beautiful mansion, and they are very ornamental, and have a splendid fountain, and also artificial waterfalls. Mr. Bateman was engineer.

REPORT OF THE DELEGATE TO THE MEETING OF THE BRITISH ASSOCIATION AT NEWCASTLE-ON-TYNE.

The Meeting of the British Association was this year held at Newcastle-on-Tyne. A large number of members were present. The papers were generally up to a fair level of quality; the meeting was a business meeting, and the whole tone was influenced by the President's address on Museums.

The members were received with great kindness and goodwill. Receptions, Conversaziones, and Meetings were frequent, and the excursions covered a good part of the north country, the most striking ones being those to the Works of the Armstrong and Palmer Companies, the Chemical Works, and the River Tyne itself.

Three excellent Guide Books* were prepared for the members and hand-guides to the places to be visited by excursionists.

Many papers were read in sections—A (Mathematical), C (Geology), D (Biology), F (Economics), and in H (Anthropology)—of great interest from a geographical point of view, but it was quite impossible from the scattering of the place of meeting to hear many others than those in our own section E, Geography.

It would be a good thing when several papers are to be read on one place, as on the Geography, Geology, and Natural History of an island, if all these papers could be grouped and taken together. As it is, one perhaps hears the least interesting of the set. Probably it is difficult to do this, but it would be more profitable to the members of the Association.

In the Geographical section, which was presided over by Col. Sir F. de Winton, K.C.M.G., the papers were not very startling, but were all good.

The president, in his address, followed the lines of the previous occupant of the chair, and gave completion to his remarks on Commercial Geography. The address will be found herewith. (See pp. 412.)

The following papers were of interest: Sir R. Biddulph, G.C.M.G., "Cyprus"; Captain Thys, "The Congo Railway"; Rev. R. P. Ashe, "Uganda"; H. E. Governor Moloney, "Yoruba"; Mr. J. G. Colmer, C.M.G., "The Canadian N. W. Territories"; Mr. R. Gundry, "China"; Captain Lugard, "Nyassaland"; Mr. J. Batalha Reis, Several papers on "Portuguese Geographical Discovery, &c."; Mr. J. Rankin, "The Mouths of the Zambesi"; Dr. Lumholtz, "Central Queensland"; Mr. A. Cooke, "British North Borneo"; Chevalier Guillaume, "Explorations in Peru and Bolivia"; Mr. H. M. Sulivan, "Siberia and Trade"; Dr. F. Nansen, "Greenland."

Dr. Nansen's papers on Greenland were the event of the section, and perhaps of the meeting.

An exhibition of pictures of Greenland, was shown in the ante-room by Mr. Reis Carstensen, the sledge and snow shoes of Dr. Nansen; photographs of Greenland and of Siberia; and Mr. Clayden's models to explain the action of the wind on ocean currents, which attracted much interest.

Mr. Basil Thomson, "New Guinea and Neighbouring Islands"; Mr. T. Bent, "The Bahrein Islands"; Dr. Guppy, "Eastern Java."

The Report of the British Association will give abstracts of these and some other shorter papers of value.

The section was well attended throughout, and lively discussion occasionally arose.

The delegates held two meetings, which were well attended. The most interesting outcome of the meetings of delegates was the ideas relating to taking the erratic blocks of the country, the note of historic (prehistoric more particularly) remains, the geological photography of the country, and the notice to be taken of the erosive action of the sea on the coasts.

I append a few out of the list of the Committees, appointed for special purposes to report at the next meeting at Leeds.

The co-operation by any of our members will be heartily welcomed by the Secretaries of the various Committees.†

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* These are now in the Library.

† See Mr. Jeff's letter on Geological Photographs.

APPENDIX TO REPORT OF DELEGATE TO THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The following Committees, having a relation to Geography, were appointed by the General Committee at the Newcastle-upon-Tyne Meeting, in September, 1889.

I.—RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
The Volcanic and Seismological Phenomena of Japan.	*Chairman*—Sir W. Thomson. *Secretary*—Professor J. Milne. Professor W. G. Adams, Mr. J. T. Bottomley, and Professor A. H. Green.	75
Recording the position, height above the sea, lithological characters, size, and origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation.	*Chairman*—Professor J. Prestwich. *Secretary*—Dr. H. W. Crosskey. Professors W. Boyd Dawkins, T. McK. Hughes, and T. G. Bonney and Messrs. C. E. De Rance, D. Mackintosh, W. Pengelly, J. Plant, and R. H. Tiddeman.	10
The Volcanic Phenomena of Vesuvius and its neighbourhood.	*Chairman*—Mr. H. Bauerman. *Secretary*—Dr. H. J. Johnston-Lavis. Messrs. F. W. Rudler, and J. J. H. Teall.	20
The circulation of the underground waters in the Permeable Formations of England, and the quality and quantity of the waters supplied to various towns and districts from these formations.	*Chairman*—Professor E. Hull. *Secretary*—Mr. C. E. De Rance. Dr. H. W. Crosskey, Sir D. Galton, Professor J. Prestwich, and Messrs. J. Glaisher, E. B. Marten, G. H. Morton, J. Parker, W. Pengelly, J. Plant, I. Roberts, C. Fox-Strangways, T. S. Stooke, G. J. Symons, W. Topley, Tylden-Wright, E. Whethered, and W. Whitaker.	5
To carry on excavations at Oldbury Hill near Ightham in order to ascertain the existence or otherwise of Rock Shelters at that spot.	*Chairman*—Dr. J. Evans. *Secretary*—Mr. B. Harrison. Professors Prestwich and H. G. Seeley.	15
The collection, preservation, and systematic registration of Photographs of Geological interest.	*Chairman*—Professor J. Geikie. *Secretary*—Mr. O. W. Jeffs. Professors Bonney and Boyd-Dawkins, and Messrs. S. A. Adamson, A. S. Reid, and W. Gray.	10

Subjects for Investigation or Purpose.	Members of the Committee.	Grants.
		£
For taking steps to establish a Botanical Station at Peradeniya, Ceylon.	*Chairman*—Professor M. Foster. *Secretary*—Professor F. O. Bower, Professor Bayley Balfour, Mr. Thiselton-Dyer, Dr. Trimen, Professor Marshall Ward, Mr. Carruthers, and Professor Hartog.	50
To report on the present state of our knowledge of the Zoology and Botany of the West Indian Islands, and to take steps to investigate ascertained deficiencies in the Fauna and Flora.	*Chairman*—Professor Flower. *Secretary*—Mr. D. Morris. Mr. Carruthers, Dr. Sclater, Mr. Thiselton-Dyer, Dr. Sharp, Mr. F. Du Cane Godman, Professor Newton, Dr. A. Günther, and Colonel Fielden.	100
The best method of ascertaining and measuring variations in the Value of the Monetary Standard.	*Chairman*—Dr. Giffen. *Secretary*—Prof. F. Y. Edgeworth. Mr. S. Bourne, Professor H. S. Foxwell, Professor Alfred Marshall, Mr. J. B. Martin, Professor J. S. Nicholson, Mr. R. H. Inglis Palgrave, and Professor H. Sidgwick.	10
Inquiring and reporting as to the statistical data available for determining the amount of the Precious Metals in use as Money in the principal countries of the world, the chief forms in which the money is employed, and the amount annually used in the arts.	*Chairman*—Dr. Giffen. *Secretary*—Prof. F. Y. Edgeworth. Mr. S. Bourne, Professor H. S. Foxwell, Professor Alfred Marshall, Mr. J. B. Martin, Professor J. S. Nicholson, Mr. R. H. Inglis Palgrave, and Professor H. Sidgwick.	15
The action of Waves and Currents on the Beds and Foreshores of Estuaries by means of working models.	*Chairman*—Sir J. N. Douglass. *Secretary*—Professor W. C. Unwin. Professor Osborne Reynolds and Messrs. W. Topley, E. Leader Williams, W. Shelford, G. F. Deacon, A. R. Hunt, W. H. Wheeler, and W. Anderson.	150
The physical characters, languages, and industrial and social condition of the North-Western Tribes of the Dominion of Canada.	*Chairman*—Dr. E. B. Tylor. *Secretary*—Mr. Bloxam. Sir Daniel Wilson, Dr. G. M. Dawson, General Sir H. Lefroy, and Mr. R. G. Halliburton.	100
The effects of different occupations and employments on the Physical Development of the Human Body.	*Chairman*—Dr. Beddoe. *Secretary*—Mr. Bloxam. General Pitt-Rivers, Sir Rawson Rawson, Dr. H. Muirhead, Mr. C. Roberts, Dr. G. W. Hambleton, Mr. F. W. Rudler, and Drs. J. G. Garson, J. Rutherford, and C. S. Jeaffreson.	20
Editing a new edition of "Anthropological Notes and Queries."	*Chairman*—General Pitt-Rivers. *Secretary*—Dr. Garson. Dr. Beddoe, Professor Flower, Mr. Francis Galton, and Dr. E. B. Tylor.	50

Subjects for Investigation or Purpose.	Members of the Committee.	Grants.
		£
Calculating the Anthropological Measurements taken in the Anthropometric Laboratory.	*Chairman*—General Pitt-Rivers. *Secretary*—Dr. Garson. Mr. Bloxam.	10
The geography and the habits, customs and physical characters of the Nomad Tribes of Asia Minor and Northern Persia, and to excavate on sites of ancient occupation.	*Chairman*—Dr. Garson. *Secretary*—Mr. Bent. Messrs. H. W. Bates, Bloxam and J. Stuart Glennie, Sir Frederic Goldsmid, and Messrs. Pengelly and Rudler.	25
The habits, customs, physical characteristics and religions of the Natives of India.	*Chairman*—Sir William Turner. *Secretary*—Mr. Bloxam. Professor Flower, Dr. E. B. Tylor and Mr. H. H. Risley.	10
For clerical assistance in drawing up the Annual Report of the Corresponding Societies' Committee.	*Chairman*—Mr. Francis Galton. *Secretary*—Professor R. Meldola. Professor A. W. Williamson, Sir Douglas Galton, Professor Boyd Dawkins, Sir Rawson Rawson, Dr. J. G. Garson, Dr. John Evans, Mr. J. Hopkinson, Mr. W. Whitaker, Mr. G. J. Symons, General Pitt-Rivers, Mr. W. Topley, and Professor Bonney.	20

II.—NOT RECEIVING GRANTS OF MONEY.

Subjects for Investigation or Purpose.	Members of the Committee.
Considering the advisibility and possibility of establishing in other parts of the country observations upon the prevalence of Earth Tremors similar to those now being made in Durham in connection with coal-mine explosions.	*Chairman*—Mr. G. J. Symons. *Secretary*—Professor Lebour. Sir F. J. Bramwell, Mr. E. A. Cowper, Professor G. H. Darwin, Professor Ewing, Mr. Isaac Roberts, Mr. Thomas Gray, Dr. John Evans, Professors Prestwich, Hull, Meldola, and Judd, Mr. M. Walton Brown, and Mr. J. Glaisher.
Seasonal variations in the temperatures of Lakes, Rivers, and Estuaries in various parts of the United Kingdom in coöperation with the local societies represented on the Association.	*Chairman*—Mr. John Murray. *Secretary*—Dr. H. R. Mill. Professor Chrystal, Dr. A. Buchan, Rev. C. J. Steward, the Hon. R. Abercromby, Mr. J. Y. Buchanan, Mr. David Cunningham, Mr. Isaac Roberts, Professor Fitzgerald, Mr. Sorby, and Mr. Willis Bund.
Coöperating with the Scottish Meteorological Society in making Meteorological Observations on Ben Nevis.	*Chairman*—Hon. R. Abercromby. *Secretary*—Professor Crum Brown. Messrs. Milne-Home, John Murray, and Buchan and Lord McLaren.
Reporting upon the "Manure Gravels" of Wexford.	*Chairman*—Mr. R. Etheridge. *Secretary*—Mr. A. Bell. Dr. H. Woodward.

Subject for Investigation or Purpose.	Members of the Committee.
An ancient Sea-beach near Bridlington.	*Chairman*—Mr. J. W. Davis. *Secretary*—Mr. G. W. Lamplugh. Mr. W. Cash, Dr. H. Hicks, Mr. Clement Reid, Dr. H. Woodward, and Mr. T. Boynton.
The rate of Erosion of the Sea-coasts of England and Wales, and the influence of the artificial abstraction of shingle or other material in that action.	*Chairman*—Mr. R. B. Grantham. *Secretaries*—Messrs. C. E. De Rance and W. Topley. Messrs. J. B. Redman, W. Whitaker, and J. W. Woodall, Maj.-Gen. Sir A. Clarke, Admiral Sir E. Ommanney, Sir J. N. Douglass, Capt. Sir G. Nares, Capt. J. Parsons, Capt, W. J. L. Wharton, Professor. J. Prestwich, and Messrs. E. Easton, J. S. Valentine, and L. F. Vernon Harcourt.
Reporting on the Tertiary and Secondary Plants of the United Kingdom, and on the higher Eocene beds of the Isle of Wight.	*Chairman*—Dr. H. Woodward. *Secretary*—Mr. J. S. Gardner. Professor J. W. Judd and Messrs. W. Carruthers and C. Reid.
To consider the best methods for the registration of all Type Specimens of Fossils in the British Isles, and to report on the same.	*Chairman*—Dr. Woodward. *Secretary*—Mr. J. E. Marr. Messrs. R. Etheridge, G. F. Whidborne, and R. Kidston.
To make a digest of the observations on the Migration of Birds at Lighthouses and Light-vessels, which have been carried on by the Migration Committee of the British Association, and to report upon the same at Leeds.	*Chairman*—Professor Newton. *Secretary*—Mr. John Cordeaux. Messrs. John A. Harvey-Brown, R. M. Barrington and W. E. Clarke and the Rev. E. P. Knubley.
Collecting information as to the Disappearance of Native Plants from their local habitats.	*Chairman*—Mr. A. W. Wills. *Secretary*—Professor W. Hillhouse. Messrs. E. W. Badger and George Claridge Druce.
The Invertebrate Fauna and Cryptogamic Flora of the fresh waters of the British Isles.	*Chairman*—Canon A. Norman. *Secretary*—Professor J. C. Ewart. Professors I. B. Balfour, J. Geikie, A. C. Haddon, W. R. McNab, W. J. Sollas, and Lapworth, Dr. H. Scott, and Mr. F. E. Beddard.
The teaching of Science in elementary schools. (Geographical teaching is included in this subject.)	*Chairman*—Dr. J. H. Gladstone. *Secretary*—Professor Armstrong. Mr. S. Bourne, Miss Becker, Sir J. Lubbock, Dr. Crosskey, Sir R. Temple, Sir H. E. Roscoe, Mr. J. Heywood, and Professor N. Story Maskelyne.
Ascertaining and recording the localities in the British Islands in which evidences of the existence of Prehistoric Inhabitants of the country are found.	*Chairman*—Sir John Lubbock. *Secretary*—Mr. J. W. Davis. Dr. J. Evans, Professor Boyd-Dawkins, Dr. R. Munro, Messrs. Pengelly and Hicks, Professor Meldola, and Dr. Muirhead.

The following Resolutions referred to the Council for consideration, and action if desirable.

That the Council be recommended to urge upon the Government of India—

(1) The desirability of procuring anthropometric measurements of a representative series of tribes and castes in the Punjab, Bombay, Madras, the Central Provinces, and Assam; it being understood that trained observers are already available.

) Also that in the Enumerators' Schedule of the Census of 1891 provision should be made for recording not only the caste to which a man belongs, but also the endogamous and exogamous groups within the caste of which he is a member; it being believed that this was actually done in the last Census of the Punjab, that it will not add to the cost of the Census, and that it will materially enhance its accuracy and scientific value.

That the Council be requested to urge upon the Canadian Government the desirability of again making a supplementary grant to the Committee appointed for the purpose of investigating the habits, costumes, and physical characteristics of the North-Western tribes of the Dominion of Canada, in view of the urgent necessity of pushing forward operations with as much rapidity as possible in consequence of the anticipated speedy extinction of many of the native tribes.

[CIRCULAR No. 1.]

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Committee on Geological Photographs: Professor James Geikie, F.R.S. (Chairman); S. A. Adamson, F.G.S.; Professor T. G. Bonney, F.R.S.; Professor W. Boyd Dawkins, F.R.S.; William Gray, M.R.I.A.; Arthur S. Reid, M.A., F.G.S.; Osmund W. Jeffs (Secretary).

"12, Queen's Road, Rock Ferry, Cheshire, November 1st, 1889.

"Sir,—At the meeting of the British Association held at Newcastle, in September last, a Committee was formed (constituted as above) to arrange for the collection, preservation, and systematic registration of photographs of geological interest in the United Kingdom. I am desired to invite your valuable aid and co-operation in furthering the work of the committee, by supplying me with the following or other information, viz.: (1) Lists and details of photographs taken, illustrating localities and sections. (2) Names of local societies, or persons, who may be willing to further the objects of the committee in their own district. (3) Particulars of new localities, sections, boulders, or other features which it may be desirable to have photographed. The committee will also be glad to receive a copy of the print from each negative, which will be exhibited at the succeeding meetings of the Association, and afterwards preserved for reference. It is thus hoped to form, eventually, a national collection of photographic views illustrating the geology of our country, and deposited in a centre where the collection will be available for purposes of study and comparison. Photographs officially received will be numbered and registered, and a detailed list published in the report of the committee, showing where the photographs may be obtained. In order to secure uniformity of action, and as a guide to those who are willing to assist in the scheme, a circular of instructions has been drawn up, copies of which will be supplied on application to any officers of your Society, or other persons who may desire to have them. Trusting to be favoured with your active co-operation, I am, your obedient servant,

"OSMUND W. JEFFS, Secretary to the Committee."

ADDRESS TO THE GEOGRAPHICAL SECTION OF THE BRITISH ASSOCIATION.

BY SIR FRANCIS DE WINTON, K.C.M.G., F.R.G.S., PRESIDENT OF THE SECTION.

GEOGRAPHY has not inaptly been defined as "the science of distribution," and from whatever aspect we view it, whether from a large and comprehensive basis embracing all the conditions which surround it as a science, or from the narrower limits of simple physiography, we find certain well-defined principles, or one may term them natural laws, pervading everywhere, whose actions have, through their influences on the past, created the present, and according to the uses we now put them must largely govern the future.

The formation of our globe, unfolded to our vision by scientific discovery, brings us face to face with nature in all her awful grandeur; and we learn how, under a beneficial and all-wise Providence, this world has been fashioned and made for the use of man during periods of time almost beyond man's calculations: and in the history of man upon earth—a mere drop in this ocean of time—we read of the rise and fall of nations, of great wars, of the discoveries of new routes (so ably described by my friend and talented predecessor in the address delivered by him in this last year), and we see what large and important developments have taken place as regards the commerce and trade of the world by the effect of these influences; and then, turning to more recent days, we enter upon the discovery of steam, and its application as a motive power—a discovery which has given rise to extraordinary changes—changes by which the whole trade of the world and its industries have been stimulated and promoted. Add to this the inventions in electricity, by which almost instantaneous communication has been established to all parts of the globe, and we may well cease to wonder at the increase that has been manifested in what may be termed the motive power of the world, and the development of its larger activities.

Still the natural laws which govern this globe, in their relation to the science of geography, remain the same. It matters not how rapidly you travel from the pole to the equator, you will freeze at the one and perspire at the other; and while passing through the different zones of temperature lying between these regions—the frigid, temperate, and torrid zones—you will find each with their own products, varying with climate, soil, and peculiarity of position, and these variations pervade the whole realm of nature. Take man as an example: with all his power of brain and reason, he is largely subject to his environment. Look at the toiling millions of the temperate zone, and the enormous activity they display, both mental and physical. Note their colour, form, nervous development, and then pass into the tropics, and the whole creature is changed; he is different in colour, and displays none of the energy or brain power of the white species of his kind. Why is this? It is chiefly due to the environment in which the creature is living.

The effect of climate upon race is somewhat remarkably illustrated in recent times by noticing the physique and nerve power of the present race of Americans. The wonderful tide of emigration which has raised them to being a nation of 60,000,000 people may have exercised certain influences as regards this change; but there are many true Americans still in existence. Two hundred years ago they were the same race as ourselves, but the difference between us now is marked. The climate of America has given them an individual stamp, and a perceptible difference in outward semblance has shown itself even in this short space of time.

Similar changes are manifested throughout the whole animal and vegetable kingdom; and while the geologist, zoologist, botanist, ethnologist, and entomologist, each and all are separate branches of science, yet each and all have a common ground in geography, and its application to the shape and form of land and sea; to the wrinkled folds of the earth's surface which we call mountains and valleys; to the mighty ocean with its currents of air and water, and the influences they exert; to the huge inland seas and lakes; to the great rivers and small streams; to the endless varieties in the animal and vegetable kingdoms; and we find these great elements of nature contributing each in its own sphere to questions relating to the commerce of the world and the development of new countries.

In this brief introduction to my paper I have designedly, though very briefly, drawn your attention to the science of applied geography, before passing in review the most recent explorations and discoveries of the present day; and while doing this, I shall endeavour to draw attention to the great necessity for a more thorough study of this science, and the influences it exerts upon trade and commerce, as we gain a better knowledge of the products of one country and the industries of another, as well as the importance of such knowledge to the great manufacturing centres of this nation as new countries are discovered and developed.

It must be remembered we no longer enjoy a monopoly of trade. Other nations are exhibiting large commercial activities; and if we desire a continuance of the trade of Great Britain, we must put our shoulders to the wheel with the same energy and creative power that have produced such astonishing results during the present century.

In the paper to which I have already alluded it was clearly shown how largely the rise and fall of the great emporiums of commerce in past centuries were influenced by the struggle for the Eastern trade. This struggle is still going on. The Russians in Central Asia are steadily advancing as each year goes by, and developing that system of absorption which has characterised their policy, especially in that region. Central Asia is the chosen field of their explorers, and the recent decease of General Prejevalsky has been a great loss to the scientific world. A full account of his remarkable discoveries and explorations appeared in the "Proceedings" of the Royal Geographical Society.

The principal work accomplished by the latest Russian explorers, Messrs. Grombchevski, Mr. Lidsky, and Mr. Grum-Grijmailo, in Central Asia, have been in the region of the Pamir, and from thence across the Hindu Kush into Hunza. Also in Eastern Bokara and in the upper waters of the Yarkand River, the Kilik Pass, and Kanjat. In the prosecution of these researches, which are all dangerously near our Indian frontier, very full reports are made, more especially as regards trade and commerce; and there is no doubt, since the completion of the Transcaspian railway to Samarcand, a great impetus has been given to Russian trade in Central Asia, even extending, by well-known routes, as far as the north-west provinces of China, where Russian goods are now found entering into competition with those of English manufacture.

By means of this railway, right into the heart of Asia, Russia has obtained the trade of a vast area, which formerly passed entirely through British hands. Both politically and commercially she is our rival in the East, and the question which nation is to be supreme must come sooner or later.

There is no more interesting country in the world than China. Her teeming and industrial population, her large mercantile centres, the geographical situation of her territory, her undeveloped mineral wealth, her individuality, and the magnitude of her trade with this country, all combine to invest her with a peculiar importance as regards our mercantile community. Coal has been discovered in all the seventeen provinces of the Chinese Empire, but the passive resistance offered by her rulers and her peoples to all attempts by foreign nations to obtain a footing in the interior have prevented any development of her resources. The day, however, cannot be far distant when railways, some of which are already projected, will open up the interior of China and make her better known; but we should be unworthy children of our forefathers if we permit the trade of this rich and widely-peopled country to pass from our hands, either from a want of energy, or from a departure from those principles of trade and commerce whose foundations are built upon the rocks of integrity and honest dealing. Nothing marks the individuality of the Chinese more than that, wherever you meet him, whatever his surroundings may be, he is John Chinaman still; he never adopts the dress, manners, or customs of other nations, but he remains constant to the pigtail, the quaint dress, and the umbrella, and if established in communities, you will find him with his joss-house, food, theatre, and his refreshment-places just as if he were in China.

Our knowledge of the latest acquisition in the East, Burmah, has been largely increased during the past eighteen months. Important surveys in North-Eastern Burmah by Colonel Woodthorpe, R.E., and Mr. Ogle, have opened up an area of about 1,500 square miles; and the fact of practicable routes between Assam and Burmah, *viâ* the Palka Pass, is now established. Burmah, with its large and intelligent population (numbering about 4,000,000), with its valuable minerals and precious stones, with its tropical products, is well worthy of the attention of the merchant adventurer; and as our knowledge of the physiography of the country is rapidly increasing, a study of its applied geography is strongly recommended to the student.

In our own territory of British India large and important surveys have been carried on under the able direction of Colonel Thuillier. These surveys are conducted in what is called the protected region; but very interesting additions, especially to the merchant, are made in the outlying territories bordering upon our Indian Empire, where no white man could go, by the employment of intelligent natives especially trained for the purpose. The information obtained by these men may be very profitably studied.

These Central Asian problems are full of deep significance to those desirous of developing and retaining the supremacy of the trade of this Empire in those regions; and I am happy to state that papers full of interest on these subjects will be presented to you during this meeting.

Turning to the northern parts of Asia, I feel some diffidence in speaking before a Newcastle audience on the subject of Siberia, for through your own townsmen, and Captain Wiggins, you are well acquainted with these regions. The exertions made by Captain Wiggins, and those connected with him in this enterprise, should receive the highest commendation; and that they have been so far successful is a matter for rejoicing. At the same time, I cannot but think that Russia, continuing the policy she has so steadily pursued for some years past, against the commercial development of Great Britain, would not object to the employment of British capital in opening up trade in her outlying dominions; for that trade, once fairly established on good business lines, would be absorbed on behalf of her own manufacturers. I do not attach any blame to Russia in this matter, but I am of opinion that more profits are to be gained when trade follows the flag, for then British enterprise and money reap more certain reward. If the energy, talent, and perseverance which have been exhibited by Captain Wiggins and his partners had been utilised in the development of some of our own territories, rather than in the territory of another nation, I feel sure they would command that success to which they are so justly entitled.

From the consideration of Siberia and the Northern Seas it is not a far step to Greenland, whose icy regions and eternal snows have been crossed for the first time in our history. The hero of this exploit, Dr. Fridtjof Nansen, is a native of Norway, and the exploration which he has so recently conducted to a successful issue was rightly alluded to by the President of the Royal Geographical Society, in his annual address, as the most conspicuous achievement of the year.

Though young in years Dr. Nansen proved himself to be a leader of men, and the account of his adventures will be found to be full of interest. The results of his expedition deal rather with the world of science than with commerce; as his discovery proved Greenland to be nothing more or less than a continent whose interior is a huge region of ice and snow. It, however, presents a most interesting study to those desirous of advancing our knowledge of glaciers and the glacial period. Dr. Nansen's description of this immense mass of frozen snow, forcing its way coastwards from the higher plateaus of the interior, by sheer weight and pressure, grinding, crushing, resistless in its slow but ever-moving power, gives one a faint idea of how the hills and valleys of the world were formed when, in remote periods of time, they too were under glacial influences.

Crossing from Greenland to North America, we still find ourselves in regions where ice and snow hold undisputed sway for a considerable portion of the year. The Canadian Government, with commendable activity, keep pushing forward their surveys into what is known as the Old Hudson Bay Territory. The Mackenzie River has been found to be a far larger body of water than formerly supposed. More accurate surveys as regards the size of some of the great lakes of those regions are being made, and our knowledge of the climate and the isothermal variations of British North America is each year increasing.

Petroleum has been discovered, and, as the geological surveys advance, other discoveries of an important nature may reasonably be anticipated. I have been told of the existence of a huge bed of porous sandstone, saturated with mineral oil, which burns like coal.

Moving southwards, we pass through the prairie-lands of the North-West of Canada, traversed by the Canadian Pacific Railway. These rich lands are being rapidly developed, and should form a happy home for some of our surplus population. Colonisation is a subject full of geographical considerations, but it demands a special paper, and I have neither space nor time to introduce it into this address. At the western edge of these prairie-lands are the Rocky Mountains, in whose foot-hills are now being reared large herds of cattle and horses, as well as flocks of sheep. Some cattle from these fertile regions were shipped last year to the English market, and no doubt a regular trade will soon follow this experiment.

Crossing the Rockies in a westward direction, you come to the Selkirk Range, then to the Gold Mountains, and lastly to the Cascades, whose wooded rocky sides plunge into the Pacific. Constant explorations are being carried on through these mountain ranges, chiefly in researches after gold and other precious metals, and our knowledge of their physiography is rapidly increasing. The Rev. Mr. Spottiswood Green, in an interesting paper concerning these regions, tells us something of the configuration of the Selkirk Range, which offers alike to the mineralogist, sportsman, and Alpine explorer a field of great interest.

Continuing southward, we pass through the fertile plains and valleys of California, whose large industries in grape and orange culture are being fostered and developed. And from California you enter into Mexico, whose wonderful mineral resources are receiving a new impetus by the construction of railways, 4,700 miles of which are now open to traffic. These railways will not only facilitate the transport of the wealth of Mexico from the coast to the sea, but they tend also to promote law and order among its restless and lawless population.

As law and good government are established, so will trade and commerce and the natural riches of the country be promoted and encouraged.

Crossing over to South America, we find considerable progress in commercial activity, chiefly due to the increased means of communication.

In the smaller republics upwards of 1,500 miles of railway have been recently constructed; while in the larger states, Brazil has 6,000 miles; Peru, 3,000; Chili, 1,630; and the Argentine Republic, 4,700; making a grand total in South America of nearly 17,000 miles of railways. This allusion to railways may not be considered as bearing on the science of geography; but railways are very important factors as regards the commerce and trade of the world, and by the facilities they afford they largely increase the power of exploration.

The southern portion of South America has been described by those who have visited and explored its savannahs and prairie-lands as possessing one of the richest grazing-lands of the world, and its development is only a question of time. In its present condition it offers a very interesting field of research to the explorer.

Time does not permit us to dwell long on the islands of the Pacific. Recent events concerning Samoa are fresh in your memories; and while some of these islands have developed commercially, it is when they lie in the great ocean tracks of the world that there real importance is manifested. Take, for example, the island of St. Vincent, of the Cape Verde group. It is nothing but a barren rock, without any produce whatever; all its water has to be brought from a neighbouring island; yet it pays a large revenue to the Portuguese Government simply for coal dues, for it has a good harbour, and lies directly in the line between Great Britain and the principal ports of South America; it has, therefore, become a most important coaling station.

From the isles of the Pacific it is but a step to Australasia, with its six great colonies of Queensland, Victoria, New South Wales, South Australia, Western Australia, Tasmania, to which may be added New Zealand. Virgin fields untrodden by the foot of white man are still awaiting the explorer to yield up their treasures to the science of applied geography; and when the marvellous progress that has been made in a few short years by our Australian Colonies is weighed and considered, and as its vast interior is opened by exploration, and its mineral resources are developed, who could venture to predict the future that lies before it?

There are now nearly 11,000 miles of railway in operation, and many more miles are in course of construction throughout these various colonies—a sure and certain indication of their energy, wealth, material prosperity, and progress. Geographically speaking, some are not without their troubles. Take Queensland, for instance. Her territory runs north and south for nearly 1,500 miles, and lies both in the temperate and tropic zones. The Governments who during past years have administered her affairs have experienced some difficulties whilst endeavouring to reconcile the conflicting interests which arise out of her geographical position.

Laws relating to labour and capital in a temperate zone are not always in conformity with the industries and requirements of a tropical temperature, in which the white man is obliged to employ labour suitable to the climate. Hence we find a numerous section of the inhabitants of the northern part of the colony agitating in favour of separation. Australia has large coal measures, and abounds in precious metals as yet hardly developed.

Attached to Australia are the great and lesser islands forming the Australasian archipelago. The most important of these is New Guinea, and quite recently a successful exploration of its highest mountain range has been accomplished by the present administrator, Mr. Macgregor, who reached an elevation of about 14,000 feet. A very interesting paper was read before the Royal Geographical Society by Mr. Paul Thomson concerning the D'Entrecasteaux and Louisade groups, adjacent to New Guinea; and though many of these islands and their inhabitants are quite new to us, still the knowledge we gain from a study of their geographical position may be turned to practical uses by the merchant adventurer.

Last, but not least, in this record of geographical progress of the world, is the vast continent of Africa.

As General Strachey, late President of the Royal Geographical Society, in his address of this year, remarks:—

"The reflection can hardly be avoided that, great as has been the advance of exploration in Africa during the last twenty or thirty years, the interest of geographers will, in the immediate future, be more and more centred in that continent. Excluding the polar regions, there is no considerable portion of the earth's surface, unless it is in Africa, the essential outlines of which have not been delineated."

These words are, I think, absolutely true. Whether we consider Africa in regard to the extraordinary explorations and developments since the commencement of the work of David Livingstone; or from the fact that vast acres of its tropical portion still remain untouched as yet by exploration, and are therefore unknown; or from a contemplation of the teeming millions of its inhabitants, of which the larger portion have never seen a white man; or from the uncompleted work of the late General Gordon, and the re-establishment of a civilised government over the whole of the Nile basin; or from the slavery question, in which our nation has taken the most active and leading part; or from the spectacle of a white man, Emin Pasha, establishing a settled form of government in the heart of the continent, between the two great slave-dealing communities of the Bahr-el-Ghazal and that of the Upper Congo and Lake Tanganika; or from the expedition sent to convey to him the succour he so much needs, under the leadership of Mr. H. M. Stanley; or from the intense interest recently exhibited by the nations of Europe in portioning out Africa between each other—an interest that has led on the west coast to the establishment of the Congo Free State, and the German protectorate in the Cameroons, France and Portugal adding largely to the possessions they already hold, and England contenting herself with strengthening her grip upon the Niger, and on the east coast by the formation of the British spheres of influence; or to the colonies which Great Britain possesses in the southern extremity of this great continent; or to the struggle which sooner or later must be fought out between Christianity and Mohammedanism as regards the native races of Central Africa, in which the river Congo will play an important part: I say when we consider all these and the many other problems of this continent, the vast interests they represent, and the varied influences they may yet exert on the future history of this earth, as well as the extraordinary part which Great Britain has been permitted to play in lifting the veil of mystery and doubt which up to our own times enveloped these regions, we are forced to acknowledge that the country in which the civilised world takes the most active and absorbing interest is Africa, and that the Dark Continent still maintains its supremacy.

As regards Africa, two very remarkable journeys have recently been brought to a successful conclusion—that of Count Teleki, an Austrian, on the north, and that of Mr. Arnot in the regions south of the equator.

The former, entering Africa at Mombasa, at the head of a numerous and well-equipped caravan, passed through the Masai country by what is known as Thomson's route, and, pushing northwards, discovered Lake Rudolph, a large inland salt lake, and by following its shores he was enabled to trace with commendable accuracy its shape, size, and position. The existence of a large lake, called Samburu, in the direction of Count Teleki's journey, had for some time been spoken of by the Arabs who traded in that region, but nothing definite was known concerning it. Count Teleki also obtained much valuable information of the region between Mount Kenia and Lake Rudolph, its inhabitants, its rivers, and its products; and the details of his most interesting and successful journey have yet to be published.

Mr. Arnot, on the other hand, started in 1883 from Pietermaritzburg with a very slender equipment and hardly any following. His object was to prove the existence of healthy plateaus in the interior of Africa where white men could live and prosecute the work of missionary civilisation without being exposed to the malarial influences which exist in so many parts of Central Africa.

Taking a northerly course, he reaches the Zambesi, whose waters he follows as far as Lealui. From this point his route trends to the west as far as Robongo, the capital of the Bihe country. From Robongo he continues his march to Bailundu, and from thence he reaches Benguela, on the west coast. Thus he crossed Africa in the same direction as Livingstone's first journey, though somewhat to the south of Livingstone's route. While at Bailundu he meets some messengers from Msidi, the chief of the Garengenze country, who beseech him to visit their king; and having replenished his stores, he retraces his steps to the interior.

From January, 1885, to February, 1886, he perseveres in his attempt to reach the capital of Msidi's country, and his efforts are at length crowned with success. After a sojourn among these people for two years, during which time he thoroughly succeeded in obtaining their confidence and that of their ruler Msidi, he returned to Europe in the latter part of last year, but not before he had established two other white missionaries at Mukuru to continue the work he had begun.

He also made several small expeditions during his residence at the Mukuru, most interesting of which was to the cave-dwellers of Urua mentioned by Livingstone. This kingdom of Garangenze is situated to the east of Lake Moero; and Mr. Arnot has recently published a book of his travels, giving very clear and interesting account of these people, their manners, and their customs. Of all Livingstone's followers, Mr. Arnot very closely resembles the great leader in the patient earnestness, the quiet energy, and the scanty resources with which he prosecuted his remarkable journeys.

He has quite recently returned to the west coast of Africa with the intention of rejoining his friends at Garengenze.

The events which attended the expedition under Mr. H. M. Stanley to succour and relieve Emin Pasha are so well known to you all that I shall only attempt a brief recapitulation here.

We have learned from his own pen how, after much suffering and great hardships, he eventually overcame all the difficulties and obstacles which had to be encountered while conducting his caravan from the head waters of the Congo to the Lake Albert Nyanza; that on reaching that lake he met Emin Pasha.

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The value of Mr. Stanley's journey and the remarkable energy and courage he displayed, his high scientific attainments, and the information that will result from his labours, are, from a geographical point of view, of the highest interest. The desiccation of the Lake Albert Nyanza, and its influences on the rise and fall of the Nile, is not the least remarkable of these problems. For my own part, I am of opinion that this rise and fall is mainly caused by the rapid growth of tropical water-plants. During the dry season this vegetation increases enormously, and at the first rains large masses of aquatic growth are loosened by the rising of the waters. These masses, in the form of floating islands, pass downwards on the bosom of the flowing waters, and on reaching a wide and shallow part of the river, such as we find at the Bahr-el-Ghazal, they gradually but quickly collect till they form a dam of sufficient density to obstruct the progress of the river; and the water thus arrested finds a temporary lodgement in the lake of Albert Nyanza, causing it to overflow its normal boundaries. At length the vegetable dam can no longer withstand the weight and pressure of the water bearing upon it; a portion gives way; a channel is opened; and the river, hurrying on to the sea, overflows the banks of the Lower Nile and drains the lake to a lower level. This is what happens to the Albert Nyanza, which is nothing more than a huge backwater of the Upper Nile basin, and it accounts for the lake being seen at two different levels by those two distinguished explorers, Mr. H. M. Stanley and Sir Samuel Baker, and hence the difference of opinion as to its true extent and size that has arisen between them. We know that this phenomenon takes place on Lake Tanganika, as Stanley found a marked difference in its level on the two occasions he rested upon its shores. He also followed the Lukuga river from the Tanganika lake to its junction with the Congo; and there is no doubt that a vegetable dam, such as I have described, forms at the point of departure of this river from the lake, and prevents its regular flow till the weight and pressure behind it sweeps all away. During the second year that I was on the Congo we had an unusually heavy flood at the time of the first rains. The river rose several feet in one night, and some months afterwards news came from the Upper Congo that the waters of the big lake had broken through, and this no doubt had reference to the Lukuga river and Lake Tanganyika.

Now, as regards the countries through which we have been passing, there are certain points of great interest connected with the science of applied geography to which I desire to draw your special attention.

The first of these points is the study of the great railway systems of the world, and the application of railways to the development of new countries. Take our Indian possessions, for example. What a change has been wrought, not only as regards the commerce of the country but also with reference to the social condition of its inhabitants and their manners and customs! The introduction of Indian wheat, by means of these railways, into the markets of Europe has caused a revolution in the trade of that commodity. We find this especially in America, where it has upset the calculations of those gigantic combinations or rings which sought to obtain a monopoly in the supply of this universal article of food. Thus the construction of railways in the East exercises commanding influences over the markets of the West.

Consider also the traffic from China and Japan to America, with its 60,000,000 people, by means of the great Atlantic and Pacific railways, in tea and raw materials. Now, although railways cannot compete with direct traffic by sea, when the necessity for more rapid conveyance of certain goods arises, we find that a combination of sea and land transport is often adopted in preference to the longer route by sea alone.

The development of any country, no matter what its geographical position may be, is enormously increased by the construction of railways. Take the Congo Free State as an instance (which is undoubtedly the finest property in Central Africa). So long as the Upper Congo region, with its miles—measured by thousands—of navigable tributaries, was separated from the Lower Congo by the rapids extending from Stanley Pool to Matadi, this magnificent territory was practically shut to trade and commerce. Every piece of goods in the interior had to be carried on men's heads for more than 200 miles, and all ivory and other products were brought to the coast in the same way. Roughly speaking, such transport costs about £40 per ton.

The Congo Free State has wisely determined to build a railway, of some 250 miles in length, to cross this cataract region; and the moment it is completed the future of that country is assured.

H.M. the King of the Belgians has kindly given permission for a Belgian officer of distinction, Captain Thys, to read a paper at this meeting on this railway, which will afford a more detailed account of this wise and patriotic undertaking.

I have mentioned railways as the first point of interest because they are creations of our own time, and have, therefore, a special interest of their own; but the most important factor in the early history of the science of applied geography, and to which the establishment of our great colonial empire is mainly due, is the record of the merchant adventurers.

Their voyages and exploits, extending to every part of the globe, began at the end of the fourteenth century, in the reign of Henry VIII., when the Cabots (Venetians) sailed from England to Newfoundland, and afterwards to Florida. This expedition and those which followed it were fitted out at the expense of corporations of merchants, with the object of extending the commerce of the country by a search after trade in new and foreign lands. They were placed under the command of some well-known leader, and the results obtained were extraordinary.

In 1530 the merchant adventurers of England attempted the North-west passage, as it is called, to China, and between 1550 and 1578, Sir H. Willoughby, Frobisher, and Sir H. Gibbon all made remarkable voyages.

Between 1585 and 1615, Davis, Hudson, and Baffin were sent by merchant companies to the Polar seas, and their discoveries are handed down by the straits and bays which they discovered, and which bear their names.

In 1580 Drake took the first English vessels into the Pacific Ocean. Drake was not only a bold and successful navigator, but he was also a commander of men, in which he showed rare tact and ability.

In 1588 the merchants of Exeter established a trade with the West African coast, and the Senegal Company was formed.

In 1553 the first effort to reach India was made *viâ* the Cape of Good Hope. It was not, however, till the year 1660 that any progress was made in the East. In that year the East India Company was formed, and it is to the establishment of this company that we owe our great Indian Empire. The year 1669 saw the formation of the Hudson Bay Company—a company which exists at the present day. And so the record goes on down to our own times. Not the least amongst the trading corporations of Great Britain were the merchant adventurers of this city in which we are now assembled; and they too contributed in no small degree, not only in the past but in the present, to the extension of our geographical knowledge and its application as a science. No doubt the spirit and energy of our Scandinavian forefathers has been fostered and encouraged until it has now found its development in the enterprise and prosperity of this great mercantile centre of the north of England. And the old churches of Jarrow and Monkwearmouth bear further testimony to the fact that, as commerce drew together communities which became centres of maritime energy and progress, religion was not forgotten, and the seed of knowledge and truth thus sown in the early history of the past has spread itself throughout the length and breadth of the great colonial empire of Greater Britain.

Following on the discoveries of the sixteenth and seventeenth centuries, and the marvellous results to which they have given birth, the story of our own times, from a geographical point of view, is quite as wonderful. As I remarked at the beginning of this paper, the discovery of steam as a motive power has brought the world into an extraordinary condition of contactiveness, and quite recently several new companies have been formed in the same spirit and on the same lines as those followed by the old merchant adventurers. These later creations are being started under more favourable conditions than their predecessors, for they have all the advantages which modern science and modern appliances can afford. The English Government have wisely encouraged and promoted the formation of these trading corporations. In countries where climate and circumstances of environment are not favourable to colonisation by white men, our colonial system of government progresses somewhat slowly. It has not the elasticity, nor the adaptability, to provide for the many contingencies which must naturally arise when a few white men maintain the position of rulers over large areas peopled by savage and uncivilised races.

In the island of Borneo there is the North Borneo Company trading, governing, and civilising a large portion of territory with marked success.

On the west coast of Africa, the Royal Niger Company is developing the great natural resources of that magnificent river, and its tributary the Binue.

On the east coast there is the Imperial British East African Company, operating in what is known as the British sphere of influence north of Zanzibar. Though not a twelvemonth has passed since they commenced their work, their initiatory proceedings have been remarkably successful, and there is every prospect of an early and rapid development of the territory committed to their charge. In the south-eastern portion of Central Africa the African Lakes Company have fairly established themselves; and a new company is now being formed to open up and civilise a further portion of that section of the African continent.

The establishment of these great trading and governing centres is likely to exercise most important influences. They are, as I have before pointed out, from their organisation and objects, better adapted at the outset to compete with and overcome the obstacles which present themselves to established forms of bureaucratic government; at the same time the Government of this country can interfere, in cases of necessity, by the grants that have been made to them of royal charters, under which they carry on their operations.

A wise control and judicious administration, combined with the introduction of commerce and civilisation, will, at no distant date, open these territories to the markets of the world, to the missionary, and to the scientific explorer. The commercial element of geography also enters very largely into their promotion and prosperity because of the fields they open to our home manufactures. It is important here to observe that, if these territories had passed into the hands of other nationalities, but a very limited quantity of British goods would ever have entered into them, and their value, as a market for the industries of the nation, would have been lost.

The establishment of a Geographical Society in this city is of real importance.* Its objects should be the collection of information, and the study of applied geography in all its varied branches and aspects. It should aim to furnish complete information concerning the geography of all parts of the globe. In Chambers of Commerce our large trade centres have, no doubt, means of guiding and controlling some of our most important mercantile operations, but they afford no opportunities to the student, they are not a teaching body; and there are instances where considerable risks have been incurred and heavy losses sustained in some of their ventures, simply from a want of knowledge of geographical data.

I should like to see a Geographical Society in every large city of this Empire, conducted on the lines I have briefly suggested, because the study of, and interest in, the commercial geography of this great Empire and the world is too much neglected amongst us. Past prosperity, and a tendency to run in the same groove, narrow our commercial horizon. Slowly but surely other nations, competing with us in many parts of the world, are doing so successfully because of the study they make of commercial geography.

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* The Tyneside Geographical Society has been in existence a year or two, and now numbers about 500 members. Its object is chiefly the study of Commercial Geography.

It is for this reason I have in my address dwelt strongly upon the question and study of geography as an applied science, and it is for a greater reason I urge its importance, viz., that we may hand down to our children unimpaired the heritage bequeathed us by our forefathers—a heritage gained by courage, energy, perseverance, and patriotism—qualities which, under God's blessing, have made this nation the head of the commerce of the world.

REPORT OF THE DELEGATE TO THE INTERNATIONAL CONGRESS OF GEOGRAPHY, HELD AT PARIS DURING AUGUST, 1889.

The large number of Geographical Societies on the Continent, and their mutual helpfulness, is perhaps nowhere more fully shown than in the numerous conferences, joint meetings and congresses held by them. And it is somewhat of a satire upon the *greatest commercial* nation of the world, that to day, after several years of effort and agitation, there are in these islands only the Royal, the Manchester, the Royal Scottish, and the Tyneside Geographical Societies in existence. If there is anything which could make Manchester men ashamed of their apathy in this respect it would be to exhibit to them the numerous well-equipped societies, with state and municipal subventions, with their prizes, libraries, museums for pure geography, and for commercial geography, their endless publications, their combinations to send out travellers abroad for information on geography, on trade, commerce, modes of communication, or new markets for goods, and to ascertain the reasons for the decay of old ones.

Whilst our country has made surprising progress by a kind of rule of thumb process, foreign countries have applied themselves to a scientific examination of the question, and having learned all we can tell them, are now pushing out on a solid basis to regions beyond. They fight us, indeed, with our own weapons, but they are our own weapons sharpened. And we shall be dullards, indeed, and shall deserve to take a second place in all commercial matters, if we cannot put our wits to school once more and learn from our whilom scholars, who are now, thanks to their careful training and patient working, becoming our masters. This, perhaps, was the one most striking thought to the delegate of your society, at this congress.

The meeting in the fine rooms of the Paris Geographical Society was divided into seven sections, which were sub-divided into as many as were required. Men met from all parts of Europe to take part in the business. Noblemen, senators, diplomatists, statesmen, professors, members of the Institute, literary, military and naval men, explorers, commercial men and manufacturers, and a host of scientific men attended the Congress.

The following countries were represented—

America: Argentine Republic, Bolivia, Brazil, Canada, Costa Rica and San Salvador, United States.

Africa: Algiers, Egypt, Congo, Senegal, Great Popo, Tunis.

Australia: Queensland, Victoria.

Europe: France, Belgium, Denmark, England, Holland, Italy, Malta, Prussia and Germany, Portugal, Roumania, Russia, Scotland, Switzerland, Turkey, Wurtemburg, and others.

It would be impossible to mention all the names of the distinguished men who graced the Congress by their presence. The members were most graciously entertained at the Exhibition (several times); at receptions by Comte de Lesseps, Prince Napoleon, Count Bizemont, and they dined together at the Hôtel Continental.

When the official report of the Conference comes to hand, a vast amount of instruction will be available for us all.

In a huge gathering of this kind, where a large number of meetings were going on at the same time, it was impossible to attend more than a few. The reporter to the Royal Geographical Society has given a fair report, particularly of the meetings he attended, and more could not be done. Your reporter attended all he could, and they were not many. He will not attempt to do more than to give the classes, in which the subjects discussed were primarily divided as follows:—

GROUP I.—Mathematical Geography, including Geodesy, Topography, Hydrography, Cartography, making 14 sections or divisions of the subjects above.

GROUP II.—Physical Geography, or General Geology, Zoological and Botanical Geography, Meteorology, Climatology, Medical Geography, making 32 sections or divisions.

GROUP III.—Economical and Statistical Geography, or 11 sections or divisions.

GROUP IV.—Historical Geography, History of Geography, and History of Cartography, in 16 sections.

GROUP V.—Pedagogic Geography, in six sections.

GROUP VI.—Travels and Voyages. Each country had been requested to supply this matter, and their reports would be duly received.

GROUP VII.—Anthropology, Ethnology, and Language, in 13 divisions.

These 92 questions, divisions, or sections covered an enormous ground, and some of the papers were of a very remarkable character, from their full exposition of the matter dealt with, and the sharp, scientific method of working. It was a very successful congress, and one that gave great pleasure to assist at. One thing should not be overlooked, viz., the very extraordinary geographical display in the Exhibition of maps, plans, charts, atlases, memoirs, monographs, models, anthropologic models, house models, countries, districts, and towns shown in beautiful reliefs.

The magnificent topographical display by the City of Paris in their two pavilions, the school works, the teachers' text books, and the pupils' work, shown side by side, were very wonderful. The Congress would have done all of us a great amount of good to attend.

A good many members of the society had the pleasure of seeing the wonderful display of the Exhibition and its surroundings, and left Paris astonished and charmed.

HUNDRED AND EIGHTH MEETING

Of the Society, held in the Memorial Hall, Albert Square, Wednesday, October 16th, at 7.30 p.m. The Rev. S. A. STEINTHAL in the chair.

The members began to gather about 7-30 p.m., and examined with great interest a number of spears and curiosities from Lake Nyassa, lent by Mr. F. Moir and the Rev. L. Scott.

The CHAIRMAN read the following letter from Sir H. F. Ponsonby, secretary to H.M. the Queen.

"Osborne, August 10th. 1889.

Sir,—I am commanded by the Queen to request that you will convey to the members of the Manchester Geographical Society Her Majesty's thanks for the copies of their journals which they have had the kindness to present to the Queen.—I have the honour to be, sir, your obedient servant,

" (Signed) HENRY F. PONSONBY.

"E. Sowerbutts, Esq."

Letters from Rev. L. Scott, Consul H. E. O'Neill, Governor Moloney, Capt. Lugard, and from H.E. Cardinal Rampollo, were read.

The following is the translation of the letter from H.E. the Cardinal, addressed to the President of the Society:—

"Illustrious Sir,—The Holy Father, who had already admired and praised the noble (sentiments) feelings of the Geographical Society of Manchester, and had, in consequence, in December last, entrusted Monsignor the Bishop of Salford to be his interpreter to convey to your excellency and its college the expression of His special benevolence, has received with marked satisfaction and gratitude the new homage which you have wished to render him in presenting Him four volumes containing "Le Recueil des Actes Officiels de la dite Société." His Holiness received it with much satisfaction, the more so that its contents is of a nature to strengthen still more the mutual relations which will contribute to the good success of that very grand work to which the Holy Father gives powerful impulse, and which the Geographical Society *prend à cœur* in the interest of humanity and civilisation in Africa. Having accomplished the agreeable message which was entrusted to me, in the sovereign name of the Holy Father to thank you for such a donation, I beg your Excellency to accept my most sincere mark of esteem.—The Divine Servant,

"(Signed) M. Cardinal Rampollo.

"Rome, 13th August, 1889."

After the letters had been read, the Chairman uncovered the portrait of His Grace the Duke of Devonshire, presented by the Right Hon. the Marquis of Hartington, and the portrait of the President of the French Republic (M. Sidi Carnot), presented by himself to the Society.

The Rev. Pamphile de Veuster (brother of the late Father Damien), then addressed the meeting in a very touching and sympathetic manner, on the work of the late Father Damien and the Leprosy question.

The address of Captain Lugard on "Nyassa" was then read by the Secretary.

Mr. F. Moir exhibited a selection of photographs by the lantern in illustration of Captain Lugard's paper, and gave very graphic illustrations of the country and the condition of the people.

During the evening the members examined the additions to the library of the Society which were on view, as also a collection of Nyassa curiosities lent by Mr. Moir.

Miss Walker, Mr. R. C. Phillips, and Mr. Bednall provided instrumental and vocal music, and refreshments were served during the evening.

The Rev. L. Scott gave some incidents of his visit to Nyassa, and moved a vote of thanks to Captain Lugard, Mr. Moir, and the Rev. Pamphile de Veuster for their addresses. Mr. J. Dilworth-Harrison seconded the motion, which was carried.

Mr. Moir responded, asking for the active sympathy of the members for the work being done in that part of Africa.

The Rev. Dr. Casartelli moved, and Councillor Leech seconded, a motion of thanks to the chairman and the musicians.

The Chairman acknowledged the vote, and the meeting closed at about 10-30.

HUNDRED AND NINTH MEETING

Of the Society, held in the Library, Wednesday, November 6th, 1889, at 11 a.m., to receive Messrs. Wardle, of Tripoli, and J. Rippon, from Formosa and Ia. S. Thomé.

A number of members attended, and had a most interesting conversation with both gentlemen. Mr. Rippon exhibited a valuable collection of photographs of Formosa, Hong Kong, Amoy, the West Coast of Africa, the Portuguese Possessions in Angola, &c.

HUNDRED AND TENTH MEETING

Of the Society, held in the Memorial Hall, Wednesday, November 6th, 1889, at 7-30 p.m.; the Rev. S. A. Steinthal in the chair.

Prince Kropotkin addressed the members on "What Geography ought to be." The address was illustrated with several maps and views. (See pp. 356.)

Mr. Mark Stirrup, F.G.S., and others asked questions in relation to the ancient flow of the Siberian rivers, to which replies were given.

The death of Mr. Harold Woolley (one of the members of the Society) having been mentioned, Mr. Percy Glass moved, and Mr. E. Toothill seconded, a resolution —"That our very sincere condolence be tendered to Mrs. Woolley and the family on the sad event," which was carried.

A very hearty vote of thanks to Prince Kropotkin was moved by the Rev. L. C. Casartelli, seconded by Mr. F. Zimmern; and Mr. W. Scott Coward (H.M. Inspector of Schools) supported the motion, which was carried.

Prince Kropotkin having responded, moved a vote of thanks to the Chairman, which was seconded by Mr. J. Hoyle Todd, and carried.

HUNDRED AND ELEVENTH MEETING

Of the Society, held in the Library, Thursday, November 7th, 1889, at 7-30 p.m.; Mr. J. Dilworth-Harrison in the chair.

The minutes of the meetings held October 11th (107), 16th (108), November 6th (109), and 6th (110) were read, and approved.

Presentations were announced from Lieut.-Col. E. Rogers, F.R.G.S., and The Agent-General for New South Wales.

A note from Mr. Guy Hillier was read, explaining that he was leaving England to-day, and was therefrom unable to address the Society, and promising to contribute from abroad.

The election of the following new members for 1890 was announced:—

Life.—Mr. F. Smallman.

Associates.—Messrs. Thos. Foden, W. Lewis Grant, and Wm. Ward.

An address by Mr. J. Rippon, A.I.C.E., on "The Portuguese Possessions of Angola and the South-west Coast of Africa," illustrated with a number of photographs lent to the ociety. (See pp. 359.) Some conversation ensued on this paper.

The report of the Tyneside Geographical Society was read, and the progress of the society noted with pleasure.

The Charter of Incorporation of the British South Africa Company was read, and elicited a spirited discussion. (See pp. 388.)

The news of Dr. Peter's death was announced, and great regret was expressed.

The Secretary made some remarks on the Stanley Expedition, and on the uncertainty of the presence of Emin Bey and Mr. Jephson with Mr. Stanley from the late telegrams.

The meeting closed at a late hour.

HUNDRED AND TWELFTH MEETING

Of the Society, held in the Mayor's Parlour, on Friday, November 15th, 1889, at 3-30 p.m.; His Worship the **Mayor** (Alderman Mark, J.P.), in the chair.

The following letter from Mr. J. F. Hutton, J.P., F.R.G.S., was read:—

"51, Marine Parade, Brighton, 13th November, 1889.

"Dear Sir,—I very much regret that I am unable to be in Manchester on Friday, and have the pleasure of meeting Governor Moloney, and of hearing his address. I regret deeply my inability to be present, and express my regard for an old friend who has shown such interest in the development of our trade in Western Africa, and especially in that of his own government of Lagos. Being one of the first European merchants to enter Lagos after its bombardment and capture from the slave traders in 1852, I would gladly have borne testimony to its progress under British rule.—Yours very faithfully, (Signed) "**James F. Hutton.**

"Eli Sowerbutts, Esq."

His **Worship**, in opening the proceedings, remarked upon the excellent and valuable work done by the Society, and commended the Society to the commercial men of the city and district. He then gave Governor Moloney a very cordial welcome to Manchester.

H. E. Governor **Moloney**, C.M.G., of Lagos, then addressed the meeting on "Cotton Interests, Foreign and Native, in Yoruba and generally in West Africa." (See pp. 255—276.)

A number of questions were asked and replied to, and remarks on the address were made by Lt. Col. **Rogers**, Mr. R. **Sykes**, J.P., Mr. W. **Mather**, M.P., and others.

The address was illustrated with maps and a large collection of cloths of native manufacture, which were very carefully examined. Invitations had been sent to all the Lancashire Chambers of Commerce.

A very hearty vote of thanks was passed to Governor Moloney for his very valuable address and for the loan of the cloths. The Governor responded, and moved a vote of thanks to His Worship for his kind presidency and the use of his parlour, which was seconded by

The **Mayor** briefly responded.

HUNDRED AND THIRTEENTH MEETING

Of the Society, held in the Memorial Hall, on Wednesday, November 15th, 1889, at 8 o'clock p.m.; the Rev. S. A. **Steinthal** in the chair.

H. E. Governor **Moloney** addressed the members on "The Melodies of the Natives of West Africa," and the airs were rendered by Mr. R. C. **Phillips** on the violin. (See pages 277 to 298.)

The paper was most interesting, and was listened to with great attention.

A very hearty vote of thanks was passed to the Governor and to Mr. Phillips, on the motion of Mr. F. **Zimmern**, seconded by Mr. C. H. **Stott**, and supported by the Rev. H. W. **Little** and the **Secretary**.

The **Governor** replied, and proposed a vote of thanks to the chairman, which was seconded by Mr. **Dowdall**, and supported by Mr. S. **Keymer**.

The **Chairman** responded.

HUNDRED AND FOURTEENTH MEETING

Of the Society, held in the Library, Monday, December 16th, 1889, at 7-30 p.m.; Mr. THOMAS SWANWICK in the chair.

The minutes of the following meetings were read and approved: November 7th (111), 15th (112), 15th (113).

Presentations were announced from:—

Messrs. G. Philip and Son.
Mr. Holt S. Hallett, M.Inst.C.E., &c., &c.
The Royal Geographical Society.
Mr. J. J. Cardwell.

The election of the following members for 1890 was announced:—

ORDINARY: Messrs. Isaac Bentley, Gustav Eckhard, G. W. Fazakerley, J. H. Keymer, Rev. H. W. Little, Charles Marzeback, T. C. Middleton, A.C.A., J. D. Milne, R. M. Pankhurst, LL.D., Robert Riddick, Henry Simon, C.E., James Wilding (in lieu of Associate).

ASSOCIATE: Messrs. Alfred Ollivant, James Saner, A. L. Thacker, and Mrs. Wilding.

The following letters, in reply to votes of condolence, were read:—

From Lord Winmarleigh.

"Winmarleigh, Garstang, December 5th, 1889.

"Sir,—I beg of you to express to the Council of the Manchester Geographical Society how much I feel their kind message of sympathy with me in my present very great grief. Accept also my thanks for your kind expressions and good wishes. Yours faithfully, (Signed) "WINMARLEIGH."

From Mrs. Macfadyen.

"Whalley Range, December 3rd, 1889.

"Mrs. Macfadyen and family beg to acknowledge receipt of the kind and sympathetic resolution passed by the Council of the Manchester Geographical Society. Dr. Macfadyen always regretted his inability to attend the meetings of the Society."

From Mrs. Walker and Family.

"Manchester Ship Canal Contractor's Office, December 7th, 1889.

"Dear Sir,—Allow me, on behalf of Mrs. Walker and family, to thank you most sincerely, and through you the Manchester Geographical Society, for the kind resolution of condolence which you have forwarded. We have been deeply touched by the many evidences of sympathy that have been sent to us from all parts of the country and from all classes, showing the universal respect and esteem in which Mr. Walker was held; and not the least touching of these is the letter that you have so kindly sent. May I ask you to convey our thanks to the mover and seconder of the resolution.—Believe me, yours very sincerely,

(Signed) "LOUIS P. NOTT.

"Eli Sowerbutts, Esq."

And from Commander G. Holm, R.N.

"Copenhagen, 23rd November, 1889.

"Sir,—I thank you very much for the most interesting "Journal," Vol. V., 1–3, which you have had the courtesy to send me. I think that I am the European that has the best acquaintance of the people on the East Coast of Greenland, and therefore I feel bound to direct your attention to the note p. 79—"a little-known race," which in no manner is correct.—Your obedient servant,

(Signed) "GUSTAV HOLM, Commander R.N."

Mr. J. A. **Swanwick** then read a paper by Mr. **Alvan Millson**, M.A., on "The Lagoons of the Bight of Benin," which was illustrated with a large map. (See pp. 338.)

The **Secretary** then read, "In Tropical Africa," from the *Daily Telegraph* (see pp. 375); "A Spring Ride in Southern Spain," from *The Field* (see pp. 378); "Swaziland," and "Italian Interests in Africa" (see pp. 366), by the Rev. L. C. Casartelli, M.A., &c. Considerable discussion ensued on the reading of the papers.

Votes of thanks to Mr. Millson for his address, to Mr. Swanwick for his reading, and to the Chairman, closed a most interesting and profitable meeting.

HUNDRED AND FIFTEENTH MEETING

Of the Society, held in the Library, Friday, December 20th, 1889, at 7-30 p.m., Mr. B. O'**Connor** in the chair.

The minutes of the meeting held December 16th (114) having been read and approved, the election of the following members by the council was announced :—

Ordinary: Messrs. C. Dennis (in lieu of associate), Joseph Halliwell, J. A. Swanwick, Henry Terry, Lawrence Wilson, and S. Benson Woodhead.

Associate: Messrs. R. B. Brierley, B.A., J. Crossley, C. E. Hindley, Job Holland, Peter Matthews, jun., and Robert Stewart.

Corresponding: Messrs. Charles Gauthiot, Paris, and James Jackson, Paris.

Honorary: H. E. Sir Alfred Moloney, G.C.M.G., Governor of Lagos.

The following papers were read: "The Newspapers of the World;" "Geography," by C. Marvin, Tyneside Geographical Society (see pp. 365); "The Great Chinese Railway—text of the Imperial Decree, &c." (see pp. 386); "Siberian Trade," by H. N. Sullivan, Newcastle (see pp. 367); "The Vikings," a review of M. du Chaillu's "Hardy Norsemen" (see pp. 397); "Duke Frederic of Holstein Gottorp, and his attempt in the 17th century to force the foreign trade of Germany through the Port of Bremen," contributed by the Vice-Chancellor of the Victoria University;* "Chinese Chess," from the Royal Asiatic Society's Journal, Shanghai branch, with a game played according to the Chinese rules on a board prepared by two members; a review of the foreign publications received during the year.

An interesting discussion took place on the several papers, and thanks to the readers and the chairman closed a most interesting meeting.

THE FOURTH ANNUAL MEETING

Of the Society was held in the Library, on Monday, October 28th, 1889, at 3 o'clock, p.m., the Rev. S. A. **Steinthal** in the chair.

Professor Core, the Rev. L. C. Casartelli, and a good many members were present.

Letters of apology for absence were read from the Chairman and several members of the Council.

The minutes of the last Annual Meeting were read and confirmed—moved by the Rev. L. C. **Casartelli**, M.A., Ph.D.; seconded by Mr. J. **Barker**.

The following Report and the Balance Sheet (which had been duly audited by Messrs. T. Gregory, F.C.A., and J. C. Blake) having been read were adopted :—

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* This paper will be published in the next Journal.

THE REPORT OF THE COUNCIL, 1889.

The work of the Society has been carried on during the year 1888 with a fair amount of success.

Keeping in view the objects of the Society, viz., to further the pursuit of the science, by the study of documents, by communication with learned societies, correspondence, and to encourage the right teaching of Geography in colleges and schools, the Council have been able to place before the members a valuable series of addresses on the various scientific, economical, and commercial aspects of the subject. These addresses have been reprinted in the "Journal" of the Society, and form a very handsome contribution to the literature of the subject.

The Society is in active correspondence with a very large number of foreign societies, with missionaries, merchants, consuls, and others abroad.

The Library has been added to very considerably during the year, both by purchase and by gift, and is rapidly becoming a most important collection.

The Council has been pleased to find a great desire to borrow such maps, diagrams, books, and other matters suitable for lending by the members to illustrate papers and addresses in their various localities, and this will probably be found to be one of the most important of the many ways in which the Society can act upon the community.

A list of the addresses given to the Society shows how much very cordial and kindly help has been given, and also the wide range of the studies and inquiries of the members.

The addresses given were as follows :—

EUROPE.

The Heart of Europe from a Railway Car : Mr. T. Newbigging, C.E.

ASIA.

Formosa : Mr. J. Rippon. The Meteorology of the Red Sea : Dr. Black, Edinburgh. The Future of the Railways in Asia.

AFRICA.

Western Equatorial Africa : Mr. Robert Capper, F.R.G.S. The Galla Country : Rev. T. Wakefield. Trade and Native Industries on the Congo : Mr. J. Ainsworth. Conference and Meeting on British Interests in the Nyassa District of East Africa. Nyassa Land : Consul H. E. O'Neill, Mozambique. Austral Africa : Rev. John Mackenzie. Liberia : Consul the Hon. E. B. Gudgeon. A Holiday in Central Africa : Rev. L. Scott.

Addresses from Rev. Professor Lindsay, of the Free Church of Scotland ; Mr. R. N. Cust, LL.D.; Bishop Smythies, East Africa ; the Rev. J. Mc. Murtrie, M.A., of the Church of Scotland ; the Rev. Horace Waller, F.R.G.S. ; the Rev. Lawrence Scott ; Mr. W. Ewing, African Lakes Company ; the Rev. T. Wakefield, late of Ribé ; Mr. W. B. Blaikie, Edinburgh ; Rev. F. O. Sutton, Newcastle ; Mr. Gilbert Beith, Glasgow ; Rev. G. S. Reaney, Manchester ; Mr. R. C. Phillips, late of the Congo ; Mr. C. P. Hankey, London ; Rev. W. H. Penney, M.A., London ; Mr. C. H. Allen, Anti-Slavery Society ; Mr. W. H. Wylde, late Foreign Office.

AMERICA.

Cruise in Central America: Captain Kiddle, R.N. Paraguay: Edited by Consul J. Parlane, J.P.

AUSTRALIA.

Victoria: The Right Rev. the Lord Bishop of Manchester.

THE POLES.

The History of Antartic Research; revised by Admiral Sir Erasmus Ommaneny.

GENERAL.

The Society's Diagrams at the Royal Jubilee Exhibiton: The Secretary. Our Water Supply to Large Towns: Councillor Sherratt. State-Directed Emigration: Mr. J. C. Fielden. "Sloyd": Mr. J. S. Thornton, B.A. Slavery in Africa: Commander Cameron; Mrs. G. Barboza. The Teaching of Commercial and Technical Geography in Elementary Schools: Mr. J. Silberbach, of Liverpool. Report of the British Association: Mr. F. J. Faraday.

The Conference on British Interests in East Africa, and the Meetings held on the same subject have had great influence in drawing attention to the important work being done in these regions by missionaries and traders, and the Society may be satisfied with the important results which have accrued.

Whilst the minds of the members of the Society have been stirred and informed by this brilliant series of papers, the question of local Geography has not been neglected.

Visits have been made and repeated to great libraries and to the district round. The reports in the proceedings of these visits are full of interest, and the bibliographical work done of permanent value.

The first Continental trip of the Society was made to Antwerp and Brussels, where the members were received with great kindness, and the visit was very profitable indeed. The following is a list of the visits paid:—

January 21, Salford Free Library and Museum; March 17, Manchester Free Library; April 21, Art Museum, Ancoats; April 28, Liverpool Free Public Library, Museum, and Royal Institution; May 12, Liverpool Free Public Library and Museum; June 23, Ship Canal—Eastham to Ellesmere Port; July 20, Boggart Hole Clough, and the Simpson Institute, Moston; August 11, Booth Hall; September 7, Brussels, Antwerp, &c., &c.

Not only do the members acquire a large amount of useful knowledge by these visits, but the social element is fostered, and a means is provided of making the members known to each other, deriving much mutual help.

The accounts for the year have been duly audited, and are appended to this Report.

It is to be hoped, as the Society becomes better known and its work appreciated, that a large accession of commercial and philanthropic persons will be made to its roll of membership. The claims of the Society especially appeal to ladies, and to those who are engaged in any way with the educational work of the day.

Death has been busy in our ranks, and we have to regret the passing away of a good many warm friends, and from other causes there must be always a number of resignations. It requires vigorous effort to replace these members, and not only to replace them but to add to them to such an extent that the Society may be able to do, with vigour and effect, the great beneficial and necessary work set before it.

REVENUE ACCOUNT,

January 1st to December 31st, 1888.

Dr.	£	s.	d.	£	s.	d.
To Members' Subscriptions—						
,, 350 Ordinary at 21/-	367	10	0			
,, 135 Associate at 10/6	70	17	6			
,, 1 Society at £2 2s.	2	2	0			
				440	9	6
,, Bank Interest				0	13	4
				£441	2	10

Cr.	£	s.	d.	£	s.	d.
By Expenses of Meetings				105	9	4
,, Journal, July to December, 1887				128	1	3
,, Rent, Rates, Taxes, Gas				50	6	2
,, Books and Maps for Library				12	19	6
,, Advertising	10	0	2			
,, Sundry Expenses, Coal, Stationery, Cleaning Offices, Postage, Carriage, Telegrams	72	9	8			
				82	9	10
,, Cost of Conference on Nyassa Question, May 18.				30	0	11
,, Balance of Income over Expenditure				31	15	10
				£441	2	10

GENERAL BALANCE ACCOUNT,

January to December 31st, 1888.

Assets.	£	s.	d.	£	s.	d.
To Arrears of Members' Subscriptions				255	2	6
,, Cash in Treasurer's hands	118	3	8			
,, Less owing to Secretary	11	18	1			
				106	5	7
,, To Balance of Deficiency Account	88	19	2			
,, Less Balance of Revenue Account	31	15	10			
				57	3	4
				£418	11	5

Liabilities.	£	s.	d.
By Eleven Life Membership Subscriptions in Reserve	115	10	0
,, Sundry Accounts owing	303	1	5
	£418	11	5

Examined and found correct,

(Signed) THEORDORE GREGORY, F.C.A., } Auditors.
J. C. BLAKE, }

October 22nd, 1889.

Moved by the Rev. S. A. Steinthal; seconded by Professor T. H. Core, M.A.

It was decided in future to have the Annual Meeting about the close of the Winter Session, and not so late as October.

Very hearty votes of thanks were duly passed to the Council and Officers of the Society, and to the Auditors for their services during the year. Proposed by Mr. Snaddon; seconded by Mr. R. Barker.

A recommendation was passed to ask the members to do their utmost to increase the number of members of the Society.

The following were elected to be the Council and Officers of the Society for the next term :—

PRESIDENT.

His Grace the DUKE OF DEVONSHIRE, K.G., Chancellor of the Victoria University.

VICE-PRESIDENTS.

- The Right Hon. the Earl of Derby, K.G..
- The Right Hon. Lord Egerton of Tatton.
- The Right Hon. Lord Winmarleigh.
- The Rev. the Earl of Mulgrave.
- Lord Frederic S. Hamilton.
- The Right Rev. the Lord Bishop of Manchester.
- The Right Rev. the Lord Bishop of Salford.
- His Worship the Mayor of Manchester.
- His Worship the Mayor of Stockport.
- His Worship the Mayor of Salford.
- His Worship the Mayor of Rochdale.
- †The Vice-Chancellor of the Victoria University.
- †The Principal of Owens College, Chairman of the Council.
- The Very Rev. the Dean of Manchester.
- The Very Rev. Monsignor Gadd.
- The Right Hon. Sir James Fergusson, Bart., C.I.E., M.P.
- The Right Hon. A. J. Balfour, M.P.
- Sir W. H. Houldsworth, Bart., M.P.
- Sir Humphrey F. De Trafford, Bart.
- Sir J. C. Lee, J.P.
- Sir J. J. Harwood, J.P.
- The Hon. Algernon Egerton, J.P.
- Mr. B. Armitage, J.P.
- Mr. Jacob Bright, M.P.
- *†Professor W. Boyd Dawkins, M.A., F.R.S.
- Mr. F. W. Grafton, J.P.
- Mr. Edward Hardcastle, M.P.
- Mr. Oliver Heywood, J.P., High Sheriff of Lancashire.
- Mr. H. H. Howorth, M.P.
- Mr. Isaac Hoyle, M.P.
- *†Mr. J. F. Hutton, J.P., F.R.G.S., Consul for Belgium.
- Mr. J. Thewlis Johnson.
- Mr. Henry Lee, J.P.
- Mr. W. Mather, J.P.
- Mr. Samuel Ogden, J.P.
- Mr. H. J. Roby, M.A.
- Councillor Henry Samson, J.P.
- Mr. C. E. Schwann, M.P.
- *†The Rev. S. A. Steinthal, Vice-Chairman of the Council.

TRUSTEES.

Mr. Alderman C. Makinson, J.P.

Mr. James Jardine, J.P. | **Mr. J. F. Hutton, J.P., F.R.G.S.**

TREASURER.

***Mr. T. R. Wilkinson, The Polygon, Ardwick.**

COUNCIL.

- Mr. Frederic Burton.
- †Rev. L. C. Casartelli, M.A., Ph.D.
- *Professor T. H. Core, M.A.
- †Miss Day, Girls' High School.
- Chevalier Robert Froehlich, Vice-Consul for Italy.
- †Mr. M. G. Glazebrook, M.A.
- Mr. George Harker.
- Mr. Elijah Helm.
- Mr. A. Hughes, M.A.
- *Mr. Job Irlam.
- *Mr. Sydney Keymer.
- Mrs. Bosden T. Leech.
- Mr. George Lord, J.P.
- Mr. J. H. Nodal.
- Mr. James Parlane, J.P.
- Mr. Fritz Reiss.
- Mons. Leon Gme. Le Roux, Vice-Consul for France.
- *Councillor W. Sherratt.
- *Mr. Mark Stirrup, F.G.S., Hon. Sec. Manchester Geological Society.
- *Mr. Thomas Swanwick.

HONORARY SECRETARIES.

***†Mr. A. R. Gallé, 29, Dale Street.** | ***†Mr. F. Zimmern, Hardman Street.**

SECRETARY.

Eli Sowerbutts, F.R.G.S., 44, Brown Street, Manchester.

*** General Purposes Committee.** **† Education Committee.**

Messrs. J. S. Thornton, B.A., and Wm. Wardale are also Members of the Education Committee.

Proposed by Mr. BRADBURN, seconded by Mr. SNADDON.

LIST OF MEMBERS,

December 31st, 1889.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate, * Affiliated Societies. All others are Ordinary Members.

HAberdare, The Right Hon. Lord, G.C.B., Duffryn, Mountain Ash, South Wales
Addyman, Thomas, Hill Brook Grange, Bramhall, Stockport
Alexander, Bernard, Museum Street, Manchester
Aldred, Thos., F.C.A., Norwood, Derby Road, Heaton Moor
Aldred, Wm., F.C.A., 8, Essex Street, Manchester
AAllen, C. H., F.R.G.S., British and Foreign Anti-Slavery Society, 55, New Broad Street, London, E.C.
Allen, Walker, jun., Beech Bank, Bolton Road, Radcliffe
Andreasian, Ohanness, 100, Portland Street, Manchester
AAndreasian, Mrs. O., Gladys Mount, Stretford
Anson, The Ven. Archdeacon, Birch, Manchester
Armistead, Richard, 28, Chambres Road, Southport
Armitage, B., J.P., Chomlea, Pendleton
Armitage, George Herbert, 30, Victoria Drive, Sale
Armitage, Sam., Chaseley House, Eccles Old Road, Manchester
Armitage, S. F., J.P., Palace Street, Manchester
Armitage, V. K., M.A., J.P., Swinton Park, Manchester
Armitage, William, J.P., 95, Portland Street, Manchester
Arning, Charles, 11, Bloom Street, Manchester
AArnold, W. A., Haworth's Buildings, Cross Street, Manchester
Arsenian, A. O , 57, Dickenson Street, Manchester
AAshburn, William, 36, Portman Street, Whalley Range
Ashby, Henry, M.D., The Lindens, Lower Park Road, Victoria Park
Ashton, W. A., Windsor Road, Levenshulme
Ashworth, Francis, 109, Princess Street, Manchester
Attkins, Edgar, 33, Princess Street, Manchester

Baddeley, John, 1, Charlotte Street, Manchester
Bagley, Ralph (Bagley and Wright), 12, Cannon Street, Manchester
Bailey, G. H., Westfield, Greenfield
Bailey, Alderman W. H., Albion Works, Salford
ABaker, William, 38, Brunswick Street, Chorlton-on-Medlock
Balfour, The Right Hon. A. J., M.P., 4, Carlton Gardens, London, S.W.
Ball, Edward, 20, Ducie Street, Oxford Street, Manchester
ABalmer, A. W., Crescent Road, Cheetham Hill
Balmer, J. E., Crescent Road, Cheetham Hill
Barclay, George, 45, Hanging Ditch, Manchester
Barker, James, Church Street, Manchester
Barker, John Lees, Bowdon
Barker, Reuben C., Kenley, Cheadle
Barker, Richard, 10, Nelson Street, Lower Broughton
ABarlow, James, Radcliffe
Barlow, John R., Greenthorne, Edgeworth, Bolton
Baron, Alderman William, J.P., Castlemere, Rochdale
Bass, Hermann, 47, Lower Mosley Street
ABates, John, B.A , Acres Bank, Stalybridge
Bates, Ralph, J.P., Acres Bank, Stalybridge
ABatho, Thomas, 33, Church Street, Manchester
Batty, Alderman William, J.P., Market Street, Manchester
ABecker, Miss Lydia E., 9, John Dalton Street, Manchester
Becker, Wilfred, 14, Cross Street, Manchester
Beith, Gilbert, J.P., 7, Royal Bank Place, Glasgow
Beith, J. A., J.P., 14, Bridge Street, Manchester

Behrens, Charles, 36, Princess Street, Manchester
Behrens, Henry, 52, Sackville Street, Manchester
Behrens, Frank, 55, Fountain Street, Manchester
Behrens, Gustav, 36, Princess Street, Manchester
ABelisha, B. I., 11, Todd Street, Manchester
HBelgians, His Majesty the King of the, K.G.
Bell, Frederick, 97, Shrewsbury Street, Moss Side, Manchester
Bentley, Isaac, Ford Bank, Bowdon
ABessant, W. S., Deaf and Dumb Institute, Old Trafford, Manchester
Beyerlein, Hans (Baerlein and Co.), Blackfriars Street, Salford
ABickerton, Richard, Richmond Street, Ashton-under-Lyne
Bienna, C. Van, 29, Dale Street, Manchester
CBigot, Professor Leon, Principal du Collége de Sées, Orne
Birch, Herbert, 54, John Dalton Street, Manchester
ABirley, Thomas Hornby, 9, Beaufort Road, Brooklands
Black, Surgeon-Major J. M., F.R.C.S.E., 2, George Square, Edinburgh
Blair, George Beatson, 18, Aytoun Street, Manchester
Blake, John Charles, 21, Turner Street, Manchester
Bleakley, Horace W., Myrtle Grove, Prestwich
ABlelock, W., 19a, York Street, Manchester
Bles, A. J. S., Chorlton Street, Manchester
Boardman, James, C.A., 64, Cross Street, Manchester
LBoddington, Councillor Henry, New Bridge Street, Manchester
HBodio, Professor Luigi, Minister of Statistics, Rome
HBonaparte, Prince Roland, Paris
ABooker, J., 54, Devonshire Street, Higher Broughton
Booth, Samuel, 748, Rochdale Road, Manchester
ABooth, William, Argyle Buildings, Heywood
Bostock, Thomas, 11, Bloom Street, Manchester
ABottomley, J. Alfred, 17, Kirkgate Buildings, Huddersfield
Bottomley, William, J.P., 43, Derby Road, Southport
Bowes, G. T., 7, St. Luke's Terrace, Cheetham Hill
ABowker, A. W., 325, Eccles New Road, Weaste
ABradburn, James, 8, St. Mary's Parsonage, Manchester
ABradburn, S. J., F.A.S., 44, Fairlawn Street, Moss Side, Manchester
Bradley, William, 14, Marshall Place, Cheetham
Bradshaw, Ed., East View, Whitefield
Bramwell, Samuel, 4, St. Ann's Square, Manchester
Bramwell, Thomas, Little Lever, Bolton
Braund, Herbert, 27, Hulton Street, Moss Side, Manchester
ABrierley, J. Swallow, 42, New North Road, Huddersfield
ABrierley, R. B., B.A., 75, South Street, Rochdale
Bright, Jacob, M.P., 31, St. James's Place, London
ABroadfield, E. J., B.A., Roselea, Prestwich, Manchester
ABrook, S. Hamill, 6, Wells Street, Buckley Wells, Bury
ABrooks, E. J., 16, Claremont Grove, Barlow Moor Road, Didsbury
Brooks, Joseph, Councillor, Shudehill, Manchester
Broome, Joseph, J.P. (Broome, Hallworth, and Foster), St. Peter's Square, Manchester
ABrothers, R. G., 12, Swinton Avenue, Plymouth Grove, Manchester
CBryce, J. Annan, 35, Bryanston Square, London, W.
ABubier, Louis (Messrs. Holdsworth and Gibb), George Street, Manchester
ABuckley, Alderman B., J.P., Heywood
ABurnham, Samuel, 2, Harwood Place, Old Trafford, Manchester
*Burnley Lit. and Sc. Club—W. Thompson, Oak Bank, Burnley
LBurton, Frederic, Hopefield, Weaste Road, Pendleton, Manchester
Burton, W. J., 38, Ardwick Green, Manchester
Butler, E., 386, The Cliff, Broughton
Butler, Samuel, Peel Causeway, Bowdon
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ACalvert, George W., Denbigh Villa, Levenshulme

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Cawley, Fredk., Moss House, Blackley
Casartelli, Rev. L. C., M.A., Ph.D., St. Bede's College, Manchester
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AClarke, Charles A., 19, Walnut Street, Cheetham
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ACohen, Meyer, 1, Minshull Street, Manchester
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Crane, P. Moir, Mersey Bank, Didsbury
Crewdson, Alfred, Springfield, Alderley Edge
Crippin, Fred., Brynn Hall Collieries, Wigan
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ACrossley, Joseph, 89, Smedley Road, Cheetham
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Cruse, Henry, Bury, Lancashire
ACurzon, Frank, Victoria Chambers, Leeds

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ADavies, Ishmael, Ordsal Lane, Salford
ADavies, Peter, 73, Elizabeth Street, Cheetham
Davies, Richard, 235, York Street, Cheetham
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AEllison, Abraham, Church Lane, Prestwich
AElston, Thomas, Bury
Elvey, Rev. Canon John M., Moorside, Kersal, Manchester
AEly, Jon. M., Dean Villa, Tyldesley
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AFletcher, Daniel, Unsworth, near Manchester
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AHeap, W., New Cannon Street, Manchester
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AHindley, C. E., The Polygon, Eccles
AHinmers, Edward, Springfield, Cheadle-Hulme
AHinmers, Joseph, 8, South Street, Manchester
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Howorth, H. H., M.P., Bentcliffe, Eccles
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Huffam, W. S., c/o Crossley Bros., Openshaw, Manchester
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AHughes, William, Alton Villa, Whalley Avenue, Sale
Husband, Alderman R., Town Hall, Salford
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Hutton, Rev. F. R. C., M.A., Chorley Road, Bolton
Hutton, J. Arthur, Victoria Park, Rusholme
Hutton, R. W., Victoria Park, Rusholme
Hutton, J. F., F.R.G.S., Dale Street, Manchester.

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AInman, Mrs., 11, Seedley Mount, Pendleton.

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ARushworth, Arthur, 52, Dantzic Street, Manchester
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RULES.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science, as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with Consuls, men of science, explorers, missionaries and travellers and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less-known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisation and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1 1s., or he may compound by one payment of £10 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceeding shall be as follows :—

(*a*) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.

(*b*) Presents, whether of money, books, maps, charts, instruments or specimens, made to the Society to be announced.

(*c*) The election of new members to be declared and the names of candidates to be read.

(*d*) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of this meeting shall be sent to every member within the United Kingdom, who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by twenty ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

THE COUNCIL.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the more efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and officers, and to summon, when necessary, special meetings of the Council and of Committees.

TREASURER.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the books of account shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

SECRETARIES.

49. The duty of the Honorary Secretaries shall be :—

(*a*) To conduct the correspondence of the Society and of the Council.

(*b*) To attend the meetings of the members and of the Council, and minute their proceedings.

(*c*) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission and the papers communicated to the Society, which have been directed by the Council to be read.

(*d*) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society and to act under the instructions of the Council.

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His Excellency LI HUNG CHUAN, Chinese Viceroy. From Mr. Rippon's photograph.

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1890.

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THE JOURNAL
OF THE
MANCHESTER GEOGRAPHICAL SOCIETY.

ON THE NECESSITY OF THOROUGH TEACHING IN GENERAL GEOGRAPHY AS A PRELIMINARY TO THE TEACHING OF COMMERCIAL GEOGRAPHY.

By H. J. MACKINDER, M.A., Reader in Geography in the University of Oxford.

[Address delivered to the Society in the Memorial Hall, on Wednesday, January 15th, 1890.]

WHEN your secretary did me the honour of asking me to address you here this evening, I felt that I should best meet your wishes by selecting as my subject a topic on which I could speak from experience. I felt further that it must be some topic in which you in this locality would be likely to take an especial interest. "The Teaching of Commercial Geography" seemed to satisfy both these conditions. It is of practical importance to you in Manchester. As for me, it will, perhaps, be well that at the outset I should present to you my credentials, that you may know on what experience my opinions are based, and be able to assess their value accordingly. I know nothing of commerce, except as an onlooker. For a long time I have taken great interest in geography. In the last three or four years it has been my lot to do much geographical teaching and examination. I have had to examine in commercial geography, and to devote some thought to the preparation of myself for that duty. I shall give you, therefore, tentative opinions, not wholly without foundation in experience.

There are two classes in the audience to whom I would specially address myself, the merchants and the teachers. To each of them the subject before us is a practical one. It is for the merchants to state their demands—for the teachers to supply them. The merchants must decide what knowledge and what capacity they expect to find in their children and apprentices. The teachers must consider and experiment how best to convey what the merchants desire. I shall be well satisfied if what I say this evening has the effect of eliciting what cannot fail to be valuable opinions from either body of experts.

VOL. VI.—NOS. 1-3—JAN. TO MARCH, 1890.

I suppose it would be broadly true to say that two generations ago we English were an uneducated nation. There were educated classes among us, but as a nation we were uneducated. Now, I imagine that it would be about equally true to say that we are an educated nation. The last two generations have bequeathed to us a system of instruction whose net has caught the great mass of our people. The present and the next generations have a new problem to face. As we put the finishing touches to the extension of our system, we become uneasily conscious that, after all, education must be very carefully sifted and proportioned if it is not to produce evils nearly as great as those of ignorance. Very few even of professed teachers, with vested interests to defend, claim that our present education is perfect.

What do we expect to find in the educated man? Do we not expect to find him possessed of a double nature—an expert, *i.e.* a specialist, in his money-earning capacity, but the very antithesis of a specialist as a citizen, as a parent, as a member of "general society"? And is not the general complaint that our present education does not give this double nature? Else, what means all this cry, on the one hand, that we lack technical and commercial teaching, and, on the other, that our much-examined youth have lost their initiative and resourcefulness? Intermediate and higher education should be both liberal and technical. Commercial geography may be used to some extent as a means to both.

In olden days men got their technical education as apprentices. The apprentice system lasted until last century, in some callings until this. People are apt to forget how general a system it was. Until nearly the middle of the present century young doctors served apprenticeships. The organisation of most of our present schools of medicine, of most of our medical diplomas, and of the general medical council, has been the work of the last two or three generations. We still have articled clerks in solicitors' offices. But in the case of the handicrafts, the collecting of industry into great factories has gone far to break down the old system—hence the cry for technical education in the narrower sense of the term. In addition, however, to professional education and to handicraft education, a third branch of technical training is called for—commercial education. Commercial men have usually to begin life earlier than professional men. It is therefore essential that a liberal element should be blended with the purely technical side of commercial education.

It has been agreed by all the authorities consulted—the Universities, the Chambers of Commerce, the Society of Arts—that among the subjects requisite to commercial education is commercial geography. But what is commercial geography? I am afraid that, as the result of much recent discussion, people's minds in this country are somewhat clouded as to the real nature not merely of commercial geography but of ordinary geography. A great scientific man has recently written a book on the teaching of geography, in which he tells the teacher to teach as geography the orders of architecture and the homologies of animals! General information is by no means to be despised, but why rechristen it geography, and drive the geographers to seek a new name?

Commercial geography, as my friend, Mr. Keltie, has put it, is simply one of the applications of geography. It is applied geography—applied to the explanation of the phenomena of commerce—applied to the help of commerce. Application involves two things—a thing applied and a thing to which applied. In the present case geography is applied to commerce, and therefore it seems only rational to ask that, before any application whatever is made, something shall be known of geography and something of commerce. In the matter of commerce the boy must at least have some idea of the common process of trade—the growth or mining of the raw material, the sale of the raw material, the transport of the raw material, its sale again, its manufacture, the sale of the manufactured article, its transport, and finally its retail sale to the consumer. It requires considerable familiarity with the ways of trade to see readily why one route or one market is better than another, and by the time this familiarity can have been acquired the elements of geographymust have been learnt, or they will never be thoroughly learnt. Moreover, it is a cardinal principle of teaching to teach one thing at once—first the geography, then the ways of commerce, and finally the application of the one to the other.

What, then, is the nature of the geography which must be taught as the basis of commercial geography? I am afraid that many people still fancy that to know something of geography is to be able to say where is Little Sandcombe-upon-Sea. This implies the idea that geography consists of so much useful or useless information. Such a geography would have done for the days before printing, but is commonly and rightly despised in an age of atlases and gazetteers. There is, however, another conception of geography—that it consists in the main of trained capacity, and only incidentally of information. My meaning will be best conveyed by an example. It shall be a commercial example. Suppose that I am told that a certain sample of wheat comes from Lahore, and that I do not know where Lahore is. I look it out in the gazetteer and ascertain that it is the capital of the Punjab, one of the eight provinces of India. If I know nothing of geography, I shall get up with the idea that Lahore is in India, and that will be about all. If I have been properly trained in geography, the word Punjab will, to borrow a term from logic, probably *connote* to me many things. I shall see Lahore in the northern angle of India. I shall picture it in a great plain, at the foot of a snowy range, in the midst of the rivers of the Indus system. I shall think of the monsoons and the desert, of the water brought from the mountains by the irrigation canals. I shall know the climate, the seedtime, and the harvest. Kurrachee and the Suez Canal will shine out from my mental map. I shall be able to calculate at what time of year the cargoes will be delivered in England. Moreover, the Punjab will be to me the equal in size and population of a great European country, a Spain or an Italy, and I shall appreciate the market which it offers for English exports. This is geographical capacity — the mind which flits easily over the globe, which thinks in terms of the map, which quickly clothes the map with meaning, which correctly and intuitively places the commercial, historical, or political drama on its stage.

One of the chief reasons why the information-theory of geography has come to be so generally prevalent is the encouragement which it receives in examinations. Information is more easily assessed by marks than is capacity, and, therefore, information is very usually asked for in examinations which involve either competition or payment by results. We are suffering just now under a reaction from nepotism and purchase, but if selection by examination is to hold its own it will have to be greatly modified.

In this connection it will be well to draw a distinction between the commercial geography of the library and records of such a society as yours, and the commercial geography which a teacher should give to his pupils. *You* rightly aim at amassing and indexing a vast store of facts. The teacher should try to produce men capable of using that store with readiness and mastery.

Capacity with a trained geographical bias being our aim, how are we to produce it? The doctrine now proclaimed on all sides is that you must begin with the home. You must start with what the Germans call *Heimatskunde.* You must teach the streets, the roads, and the map of the immediate neighbourhood of the school. This is the true inductive principle, which undoubtedly required emphasising, but which can be pushed too far. Most subjects have to be begun dogmatically. Logical development comes at a later stage. The alphabet, the multiplication table, and, as I urge, the great outlines of land and water, must be taught young, and taught dogmatically. Our object at this stage is less to train the reasoning powers than to imprint on the yet plastic mind certain fundamental forms and relations which are to become its second nature. The root of all geographical ability lies in being at home with maps. Most people in this country require the aid of the name in the corner before they recognise the outline shown. There are comparatively few who turn to the map as they would to the photograph of an old friend's face. If an errand boy were wanted in a Manchester office, would it not be expected of applicants for the post that they should know the business parts of the town familiarly? There is a great difference between the acquaintance of Manchester got by a stranger, Baedeker in hand, and that intimate knowledge which would enable a smart errand boy to carry a telegram by the shortest cuts, without a moment's calculation. There is the same difference, in a yet more marked degree, between knowing your notes and being able to touch them unconsciously on the piano in the execution of an opera.

A chief cause of awkwardness with maps is to be found in the one little atlas which was the companion of most of us for several years of our youth. France, as we think of it now, is the France of that atlas; Italy is the Italy of that atlas. We divide the world into parts as it happened to be divided there. The relative sizes of lands were determined for us once and for all by that particular collection of maps. In a word, we are wooden and rigid in our geographical vision, and no amount of subsequent correction quite atones for the original sin. Witness the difficulty many people have in following a lecturer who has occasion rapidly to range over the length and breadth of the world. The majority of his audience are out of breath as he hops out of one familiar compartment into another.

This tendency to crystallisation must be constantly guarded against. Why not draw Italy to-day, Italy with France and Germany to-morrow, Italy with Turkey the day after, &c., &c.? Thus the form would become familiar, but with different settings. Or why not draw England and India, on the same scale to-day, and Russia and India on the same scale to-morrow? So, too, with the text-book—why the chapter on France to-day, that on Germany to-morrow, and so on in sequence of countries? Why not constant comparison—the mountains of France *and* Germany to-day, the rivers of France *and* Germany to-morrow? The text-book should be a servant, not a master. The teacher should teach as he would teach geometry, with a succession of problems and riders.

If any large proportion of the community were thus trained, our books and newspapers would begin to save many quires of print by recourse to sketch-maps and diagrams, as they have already taken to pictorial illustrations. Thinking in terms of the map is an extra mode of expression, almost an additional plane of thought.

With such a preparation as this, commercial geography would be a fruitful subject. It would contribute both to the technical and liberal education of the commercial youth. As practical problems he would have to weigh the relative advantages of alternative routes, to plan round voyages so that the ship should be most rarely empty, to balance the rival advantages of different lands for the growth of the same commodity, and so forth. Theoretically, he would learn the past geography of commerce; he would see in Tunis and Sicily the granaries of Rome, and would picture the overland trade from the East by Constantinople or Venice. He would so learn that the present order is not eternal, and would be keenly on the alert for change in the future. His geography would become suggestive in his commerce.

In the main, then, geography and its supplement, commercial geography, should be so taught as for ever to impress the mind of the learner with a certain number of great landmarks on the globe, and to give him the capacity and habit of so using those landmarks as to carry his mind with ease to any spot in the world, and to picture its characteristics and relations. And this, I contend, can never be done unless geography be first well taught apart from the commercial complication.

Teachers of commercial geography must keep in mind the fact that technical education is not aimed at making walking encyclopædias, but at turning out men who shall be supremely makers, doers; and commercial geography will be judged in the long run by the part it takes in making merchants who shall be ready, accurate, and imaginative.

Prince Henry of Orleans' Journey through Central Asia.—Some further details respecting the expedition of M. Bonvalot and Prince Henry of Orleans, to which we briefly referred to in our last number, have been received by the Geographical Society of Paris. The party, which includes a Belgian missionary, M. de Decken, who acts as interpreter, left Kulja about the middle of September last, and arrived at Korla, near Lake Baghrash, after a journey of 22 days across the Tian Shan. The route followed was first of all to Mazar, and then along the valley of the river Kash. The first mountain pass led them into the valley of the Kungez, a second pass into that of the Tsakma, a third into that of Yuldus, and a fourth into that of the Khaidu-gol or river of Karashahar, which is described as a gorge. Great variations of temperature were experienced during this short journey; 104° (Fahr.) in the shade in the valley of the Kungez, and zero (Fahr.) in the Yuldus valley. The greatest altitude reached was at the pass of Narat, which is about 11,500 feet high. Forty specimens of birds and mammifers were collected. The travellers were *en route* for Lob Nor.—*Proceedings of the Royal Geographical Society.*

Pievtsoff's Expedition in Central Asia.—Since our last issue further news of the progress of this expedition has been received. From its winter quarters at Nia, Lieut. Roborovsky had discovered a practicable route across the mountain range into north-western Tibet. The country beyond was found to be a tableland, 12,000 feet above sea level, desolate and uninhabited. The expedition will move forward at the beginning of April, and pass the summer on the plateau, descending thence in Sept. and travelling *viâ* the Cherchen river to Lob Nor.—*Proceedings of the Royal Geographical Society.*

ROSSEL ISLAND. (A CANNIBAL ISLAND.)

BY MR. BASIL THOMSON.

[Read to the Members by the Secretary at a Meeting in the Library, January 24th, 1890.]

WHEN the flag which had been so often hoisted over New Guinea was finally run up in August last year, and sovereignty proclaimed over the strip of country left to us by Holland and Germany, the scattered archipelago which stretches 150 miles to the eastward of the island continent was included in the "Possession" of British New Guinea. Visited only by schooners recruiting labourers for the Queensland labour trades, among which was the notorious Hopeful, the few natives who have seen a European both distrust and fear him. The occasional murders of isolated pearl and *bêche de mer* fishers have given the natives of these islands so evil a reputation among the white residents in New Guinea, that no professional collector of natural history has ventured among them, so that ornithology is nearly, and entomology quite, a new field to the naturalist, while botany has been left untouched. And just then a special interest attached to the geology of these islands, owing to the discovery of gold in the island of Sudest, in a formation of schistone slate, which is common to the neighbouring islands Exaggerated accounts of this gold find reached Cooktown (Queensland), and hundreds of miners from the Cook district took their passage in whatever craft they could find for the new gold-field. Sovereignty had been proclaimed, but as yet there were no police nor machinery of justice. The genuine miners, who are an orderly community, were certain to be followed by the scum who haunt the gold-fields, to prey upon the diggers—"spielers," card sharpers, adulterated grog-sellers, and men who are "wanted" by the police. It was obvious that something must be done to maintain order among the whites, and prevent collisions between them and the natives. The necessity for visiting Sudest, which, except Rossel, is the most easterly of the Louisiade group, afforded an opportunity for exploring the least known of the islands. Accordingly, after disposing of the official business at Sudest, we reached Rossel on October 9th. Special interest is attached to this island. The dangerous reef, known as Rossel Spit, which runs far out to the south-east, has been the destruction of more than one vessel, and the reported ferocity of its inhabitants, so different from their neighbours of Sudest, has enveloped the whole island with an air of mystery. The following is an extract from the Admiralty Sailing Directions:—

"On the 30th September, 1858, the ship St. Paul, bound from Hong Kong to Sydney, with 327 Chinese passengers on board, was totally wrecked on this island, when all hands reached the shore. The captain and eight of the crew then left in a boat to obtain assistance, and on the French steamer Styx arriving at the spot from New Caledonia, early in January, 1859, it was found that the whole of the passengers and the remainder of the crew, with the exception of one Chinese, had been horribly massacred by the natives. The survivor stated that the natives feasted upon the bodies of their victims."

To eat 326 Chinamen would require a large population, for even Chinamen will fight to defend their lives; and it was therefore with some surprise that we saw before us a towering wall of tropical forest as guiltless of clearings as if man had never set foot on the island. As we steamed up to a small off-lying island (High Island) a few canoes put off to the Hygeia, which we had in tow. They were manned by natives of small stature and uncouth appearance, who differed from their neighbours of Sudest in having none of the Papuan characteristics. They seemed far more like natives of the new Hebrides. For clothing, the men wore a perennial band, consisting of a large pandanus leaf, secured by a cord of human hair, wound several times round the waist. Neither here nor on the main island did we see any of their women, but as we found a number of grass petticoats in the houses we may suppose that they wear the dress common to all New Guinea women. Every second man suffered from *tinea desquamans* (Jokalan ringworm), an unsightly and loathsome skin disease, which is supposed to have come from the Line Islands, and to be steadily travelling westwards. It appears in patches of a dirty-white colour, from which the skin continually peels off, but though the person suffers some inconvenience the disease does not incapacitate him in any way. We found on shore one boy who had been on a Queensland plantation, and who spoke "pidgin" English. We could not persuade him to accompany us to the interior of the main island, which he said was inhabited by enemies, who would kill and eat him after we were gone. Next day we steamed into Dixon Bay, a deep indentation which reaches to the foot of Mount Rossel. As the bay was unsurveyed, and probably full of coral patches, we anchored on the south side, opposite a small village, and there the gunboat left us to shift for ourselves. The interpreter, brought from High Island, at once deserted, and we could only learn from our new friends that if we crossed the mountains we should all be cooked and eaten. At the bottom of the bay was a wall of mountains, forest-clad to their summits, and crowned by Mount Rossel, about 3,500 feet high. Unable to persuade the friendly natives to accompany us, and finding all the other villages in the bay deserted, we divided our baggage and provisions into seven packages, weighing about 30lb. each, and started, each man being armed with either a Winchester rifle or shot gun and revolvers. Soaked with heavy rain, and trying to steer by compass through the labyrinth of wild boar tracks, which formed a net work through the gloomy forest, we spent our first two days in great discomfort. Often we had to cut our way through a barrier of thorny creepers with the cavalry sabres with which two of our party were provided. We halted at last in a small deserted native village, not far from the sea, to dry our baggage, which had suffered much from the rain. The day was devoted to collecting. Considering the damp climate, and the richness and variety of the vegetation, Rossel Island is by no means rich in beetles and butterflies; nor is there much variety in the birds. Among the beetles were two new species, one being probably the largest burrowing beetle in the world. We obtained only two new species of birds, and two snakes, both new. But the botanical specimens amply compensated for the poverty in animal life, and we regretted deeply that we were not better provided with appliances for drying and preserving plants. Much of our collection was useless for purposes of comparison on its arrival in Melbourne.

At length, on October 14th, we began our ascent of Mount Rossel, and after travelling for some miles along a ridge running in an easterly direction, we branched off and descended the other side of the range. The native track soon became a wide and well kept road through the forest. Expecting every moment to see a large town, we were not a little disappointed to find ourselves in a small fortified village, so recently deserted that the fires were still burning in the cooking places. The only plausible explanation of the road is that the forest into which the natives are compelled to penetrate in search of food is haunted by spirits who can only be exorcised by light and air. Nowhere else in the island, nor in the mainland of New Guinea, did we find a similar road. The valley in which we now found ourselves was sparsely timbered and highly cultivated. A rapid stream flowed past the village in a S.E. direction. But beyond the dismal and weird howls of a few tame dingoes our shouts brought no response. Our hosts had fled, and so we could not ask for hospitality. We took it, and passed an uneventful night in their village. The houses were of the usual Rossel pattern—an inverted boat on a platform five feet from the ground. There were no doors at the ends, but the house was entered through a trap door in the floor. The floors were littered with baskets filled with food and the ordinary utensils of New Guinea; the eaves were filled with bundles of spears, so placed that they could be easily seized from either inside or outside the house. But even in this remote corner of the world, never willingly visited by a ship, the age of stone was passing away—the age of iron was come. A dozen adzes, made of iron bolts or chain plates, told the story of the German brig, wrecked on Rossel Spit a few months ago, and showed that these inland people have trade communications with the natives of the Eastern coast. Among the rest were a few pieces of very old iron, almost eaten through with rust, doubtless relics of the ill-fated St. Paul. There were three or four skulls and a few human bones lying as if neglected on piles of stones and rubbish. The party sent out at daylight to shoot pigeons reported that they had found another village in the neighbourhood, so before continuing our journey we went to see it. On the way we came suddenly on half-a-dozen natives carrying cocoanuts. They dropped their burdens and fled into the bush, in spite of our shouts of "Gemba" (peace). The cocoanuts were perhaps intended as a peace offering for us, and would have been presented to us outside the village we slept in. In the new village we found a pile of human bones and skulls so placed as to leave little doubt that they were the bones of enemies who had been cooked and eaten. The houses were well built, and one of a different pattern was ornamented with squares and diagonals of red and black paint. In one house was the rude model of a European ship. The day was spent in forcing our way through mangrove and sago swamps, climbing steep hills, and passing small villages, apparently deserted at our approach. At length, after following a ridge leading S.E., a glorious view burst upon us. The south coast of the island lay like a map at our feet. Far to the S.E. stretched the dangerous reef known as Rossel Spit, while nearer to us a silver line of foam showed the barrier reef broken by three different openings leading to small harbours. The S.E. coast of an island in the South Pacific is usually the most populous, and we were therefore not a little surprised to see no more than three small clumps of cocoanuts marking the sites of small villages. Cocoanuts are a sure indication of a village, and, except in quite new settlements, there are no villages without them. Being pressed for time we could not explore the N.E. coast, but from the height of the mountain spurs, and the narrow space between their summits and the sea, we judged that there would be little or no flat land capable of cultivation. Our return journey over Mount Rossel to the schooner was uneventful, but a few days spent at the anchorage enabled us to open relations with the natives of Dixon's Day, one of whom spoke "pidgin" English. From them we learned that the people eastward made periodical descents upon their villages, killing and eating those whom they took unawares. The population of the island offers a difficult problem. The mountains and woods are a network of native paths, such as in Fiji are not found, even in the most thickly populated districts; and even allowing that the dense foliage would prevent the rapid appearance of undergrowth, the inhabitants of Rossel must either be very numerous or much given to wild pig hunting. If the accounts of the wreck of the St. Paul are to be believed, the population must have been very numerous thirty years ago, for 300 Chinamen would hardly allow themselves to be killed and eaten by a handful of natives. On the other hand, the villages and plantations on three-fourths of the island seen by us would not maintain a population of more than 1,500 or 2,000 souls. It is probable that since 1858 the island has been visited by an epidemic, which has reduced the population by one half, the more so since we passed through a deserted village. This is not without precedent. In 1875 the population of Fiji was reduced from 140,000 to 100,000 by an epidemic of measles. A few years suffice in these latitudes to efface all traces of a native settlement. Indeed, the only durable ruin left of a deserted village are oyster shells and pieces of broken pottery.

The language spoken by the Rossel islanders differs very much from that in use among the other natives of the Louisiade Archipelago. The island itself is separated from its fellows by a strait of deep sea, which contracts the great ocean rollers into a most dangerous passage for canoes.

It was found that a colony of Tongans who had been carried southwards in a gale to the island of Pylstart, had in a very few years changed not only the words they used but even the pronunciation of the words they had retained, and it would therefore not be wonderful if a tribe who had not yet even attained to the substitute for written literature—national songs—should have so modified their original tongue that it no longer betrays its origin.

The language is spoken with a curious half querulous intonation, which is quite peculiar. It is full of the ellipted consonant sound which in Eastern Polynesian is expressed in writing thus: "Ji'i," "Uma'a," &c. It is not improbable that when the vocabularies are compared, the dialect of Rossel may be found to be allied to those of the New Hebrides.

And so the mysterious island was explored, and as in all mysteries the *dénouement* was a little disappointing. But although no fierce and warlike tribe of cannibals inhabit its gloomy interior, yet the silence and solitude of its sombre forests, relieved only by the profusion of flowering orchids or the flash of some bright plumaged bird, leave an impression on the mind that is not easily forgotten.

"UNKNOWN FRANCE."

THE HYDROLOGY OF THE CAUSSES OF LANGUEDOC—THE GORGES OF THE TARN, ITS CAVERNS AND SUBTERRANEAN STREAMS, BEING A CHAPTER ON DENUDATION AND THE RÉGIME OF UNDERGROUND WATERS. *(See map.)*

BY MR. MARK STIRRUP, F.G.S.

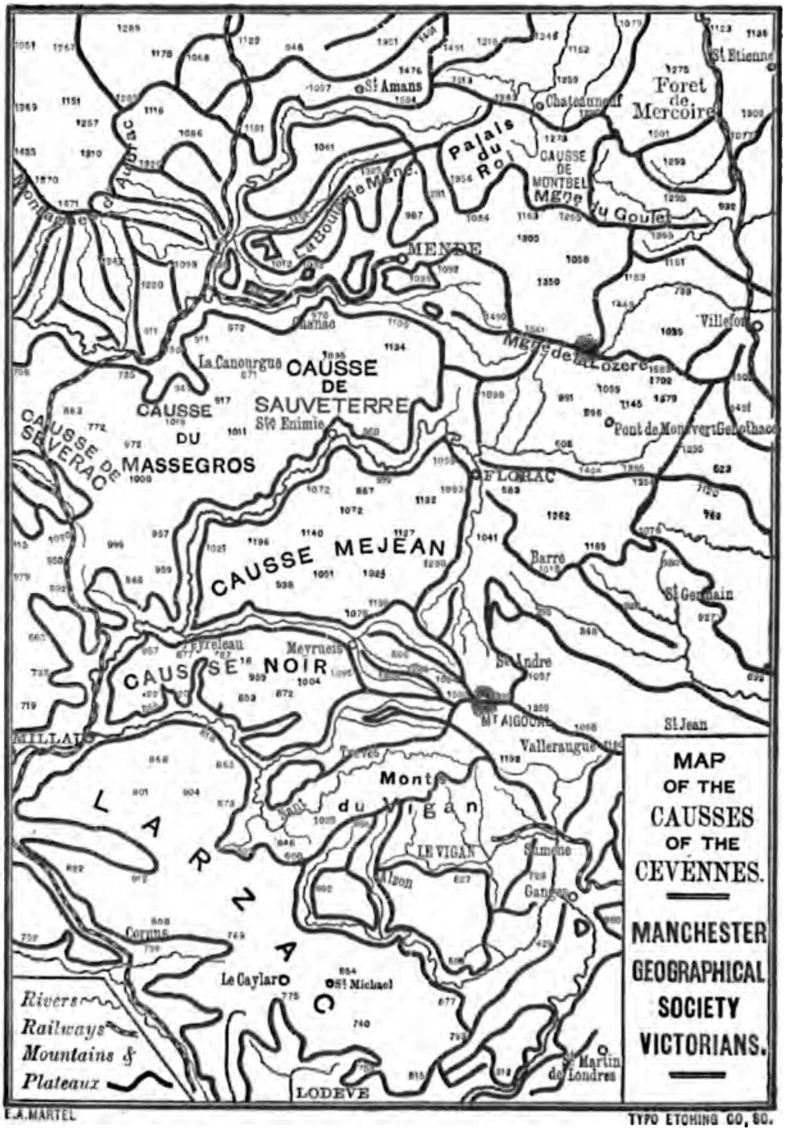
[Addressed to the Members at the Memorial Hall, February 12, 1890.]

THE corner of the world to which I have been asked to draw your attention to-night is one full of interest not only to the geographer, the geologist, and the lover of nature, but also to those who are in search of mere novelty and adventure.

This "pays des Causses" is situated in Southern France, in the northern portion of the ancient province of Languedoc, and is now included, for the most part, in the modern departments of La Lozère and L'Aveyron. The little notice this district has received at the hands of travellers and geographers may be due to various causes, the principal of which is probably its previous inaccessibility and comparative isolation in the heart of the Cevennes Mountains, in a region reported to be the poorest in all France, both as regards agriculture and commerce. This neglect, it is to be hoped, will now be remedied by recent railway extensions, which give ready access to the country.

The attention of the public has only recently been drawn to this region by the appearance of articles in certain French geographical and scientific journals, describing the attractive features and great natural curiosities which are here to be met with. The explorers to whom I am mostly indebted, for the facts and statements which I shall have to put before you, are M. Malafosse, of Toulouse, and M. Martel, of the French Alpine Club, to the latter of whom I am indebted in various ways for his kindness in furnishing me with information, and his assistance and judgment in selecting the views that will be shown in the lantern, some of which embody his own explorations, so recently as the summer of last year, and which have not hitherto been put before the public, except by Mr. Martel himself.

Before proceeding to consider the claim to your attention of the special district of the Causses of Languedoc, I wish to draw your attention to one or two of the physical causes which have determined the present surface features of the earth, of which the region I shall have to describe is a grand illustration.



E.A.MARTEL

TYPO ETCHING CO, SO.

The small figures represent the height above the sea level in metres.

MAP TO ILLUSTRATE ADDRESS OF MR. M. STIRRUP, F.G.S.

Copied from Mr. Martel's Map for *The Journal of the Manchester Geographical Society*.

Geography, understood in its widest sense, comprehends many departments of knowledge, but my remarks will, for the most part, only extend to that branch which has for its object the study of the physical features of a country and how they have been produced.

The physical outlines of the earth's surface are ever changing. What they are now, they have not always been. Level tracts are upraised and mountain lands brought low, and though some of these alterations are inappreciable during the short span of a man's lifetime, yet they are nevertheless constantly going on and readily recognisable to the educated eye.

These changes are due to the play of natural forces, some of which are ever building up or constructing, whilst others are wasting away or destroying. It is to these latter agents that your attention will be directed this evening. Water, in the shape of rain and rivers, is one of the most important factors in the work of denudation and destruction, often in combination with other meteoric forces—sun, wind, frost, ice, and snow. The power of water to erode the solid rocks depends largely on its rate and volume, modified by the mineral constitution and geological structure of the ground over which it flows. Some rocks offer great resistance to the permeation of water through them, such as clays, granites, and certain schists, while others are readily penetrated, as in the case of sands, gravels, and limestones. Limestone and dolomitic rocks (the latter of which are a compound of calcium and magnesium) are peculiarly liable to the ravaging effects of running water, as the stream has then not only an erosive power, due to its mechanical action, but it has a chemical one superadded.

Rain water is charged more or less with carbonic acid, and coming into contact with the limestone, dissolves it molecule by molecule, and carries it away in solution.

The application of these general remarks to the particular district under consideration will be manifest when you see, in the views projected on the screen, the extraordinary results of this combined mechanical and chemical work of water, not only on the surface of the ground, but also in those subterranean and invisible regions which are so difficult of access to man. This destructive work, in the present instance, is due in large measure to the mineral composition of the rocks, which are built up of those materials most readily acted upon by denuding agencies, viz., limestones and dolomites.

The name *Causses* applied to this region and its signification may probably be unknown to most of you. Its derivation is evidently from the Latin *calx* (limestone or lime), through the intermediary of a *patois* name, *caous.* It is a local name, applied to certain large calcareous plateaus, high tablelands ranging from 2,600 feet to nearly 4,000 feet above sea level, which extend into the departments of the Lot, Lozère, Aveyron, Gard, and the Hérault. They divide the schists of the southern Cevennes into two portions, the basin of the Lot being on the north, while they are cut off on the east by the granites and schists of Mount Lozère (5,580ft.) and Mount Aigoual (5,138ft.)

The special features of the Causses are their deep gorges, their plateaus cracked with innumerable fissures, traversed by numerous vertical *avens* or swallow holes, and rocks of marvellous shapes cut out of their cliffs, while their interior recesses have been excavated into caverns and tunnels by subterranean streams, making it a region unique in France. These characteristics are partly due to the elevation and position of the Causses with regard to the neighbouring higher lands, and more especially to the mineral composition of the rocks which go to build up their mass.

Without entering into geological details it may be said that the rocks of the Causses belong essentially to the Jurassic formation, and consist principally of limestones, dolomites, and marls, resting upon the lias. The dolomite is one of the most characteristic rocks of the region, and, as previously remarked, it lends itself readily to disintegration and erosion, as will be seen in the vertical escarpments and curiously-eroded rocks pictured in the photographic views to be submitted to you.

"The Causses," says the geographer Reclus, "are unique in France, by their configuration, their aspect, and their climate." As to the two former characters, you will be able to gain some idea from the photographs, and as to the climate, on the surface of the Causses it is extreme; rigorous, and severe in winter, often impassable from the depth of snow; while in the summer it is baked with a burning heat. In the valleys, however, several hundred feet below, a warm and Mediterranean climate prevails, permitting the growth of almond trees, vines, and the olive. These tablelands have been divested of their wood, and are now, in fact, deserts, naked, dry, without water or wood, except on the edges and flanks of the Causses, among the inaccessible rocks, where remnants of their ancient forests of beech and oak still maintain a foothold.

Of the numerous special features of this region, one of the most wonderful and picturesque is the river gorges, narrow ravines or cañons, which separate the several Causses from one another. The walls of these gorges are, for the most part, vertical, rising from about 650ft. to, in some cases, nearly 2,000ft. above the stream, which flows between them. The cliffs have not been rent asunder by any great earth movement, as you might at first suppose, but the severance is due to erosion by running water in a manner which will be illustrated hereafter.

The three principal streams which divide the Causses are the Tarn, the Jonte, and the Dourbie. The gorge of the Tarn is the most beautiful and perhaps the most characteristic, as, for a distance of about 50 miles from Florac to Millau, the river runs in a narrow, deep, and sinuous crack, between perpendicular walls, which in some places rise to 1,300ft. and 1,600ft., and even upwards of 1,900ft., above the river itself.

Another singular particularity of the Causses is its hydrography, or the conduct of its waters. Its rivers have no affluents open to the light of day—that is, with open-air channels. The streams are recruited and supplied from subterranean sources, by means of powerful springs, which issue out of dark caverns or narrow fissures in the sides of the cliffs or well up from the bed of the rivers themselves. These springs are outlets of often unknown subterranean currents.

MM. Martel and Gaupillet have succeeded in reaching two of these currents—the one under C. Larzac, at the bottom of the abyss Mas Raynal, near Cornus, 106m. (350ft.), the other under C. Gramat, at the bottom of the Puits de Padirac (Lot) 108m. (350ft.), the latter of which has been followed in a boat over 2 kiloms. through splendid grottoes, eight lakes, and 33 cascades or rapids, without the explorers being able to see the end—probably it is a feeder of the Dordogne. The conclusion drawn from these discoveries is that the rains penetrate the calcareous plateaus by percolation, and are accumulated under the form of subterranean rivers (and not in large sheets) in the fissures of the ground, which are widened by erosion, and that the interior of the Causses is much less cavernous—much less hollow—than was thought.

The first of the series of pictures that will be shown to you introduces us to the river Tarn, at a point soon after it becomes navigable, a little south of St. Enimie, at St. Chély. The river varies in depth according to places and seasons, sometimes widening out into lake-like expanses, then narrowing again until the river fills up the whole width of the gorge. Between St. Enimie and Peyreleau several rapids are traversed among the great rocks which in places are strewn along its bed.

One thing which these pictures will fail to show, is the wonderful colouring of the white dolomite cliffs when lighted up by the rays of the setting sun, spotted and dashed as they are with shades of the brightest of red, yellow, and orange, due to the salts of iron with which the dolomite is impregnated.

Although these views have an attraction from a picturesque point of view, yet it is as illustrations of the power of running water in altering the surface outlines of our earth that I would prefer you to regard them.

[A series of views was then thrown on to the screen, illustrating in a clear and charming manner the characteristic features of the Causses. Some of the most picturesque portions of the Gorge of the Tarn were shown, with its vertical walls of rock, penetrated in places by numerous caverns. The views of that marvel of the Causses, Montpellier-le-Vieux, or the city of rocks, were intensely interesting, showing the curious shapes its cliffs have assumed under the eroding influence of water, simulating, in some instances, the forms of natural objects, but of gigantic size, while from some points of view these weathered rocks bear the semblance of titanic ruins of some ancient city. The subterranean action of water was also exemplified by several views of the Grotto of Dargilau, the walls of whose numerous chambers are adorned by the most picturesque crystallisations, the formation of which was explained. Other wonders of the Causses were shown in views of some of the principal *avens* or swallow-holes; also the underground course of the river Bramabiau was traced, showing a gorge in the process of formation.]

To sum up, in a few words: The lesson taught to us by the series of landscapes and the views of the subterranean recesses of the Causses vividly demonstrate the results of denudation and the extraordinary power of running water in sculpturing the solid rocks and changing the aspect of the earth's surface.

The different plateaux which we now see separated by those deep gorges were once a continuous land, over which the water swept in channels, now obliterated or entirely eroded away.

Where are now the streams which carved out those long corridors and magnificent caverns which you have seen projected on the screen? The *present* puny streams, their modern representatives, seem quite incapable of the task.

We are driven to admit that at some anterior geological epoch streams of greater volume and intenser action once filled these dry grottos and galleries, probably due to a more excessive atmospheric precipitation or some change in climate.

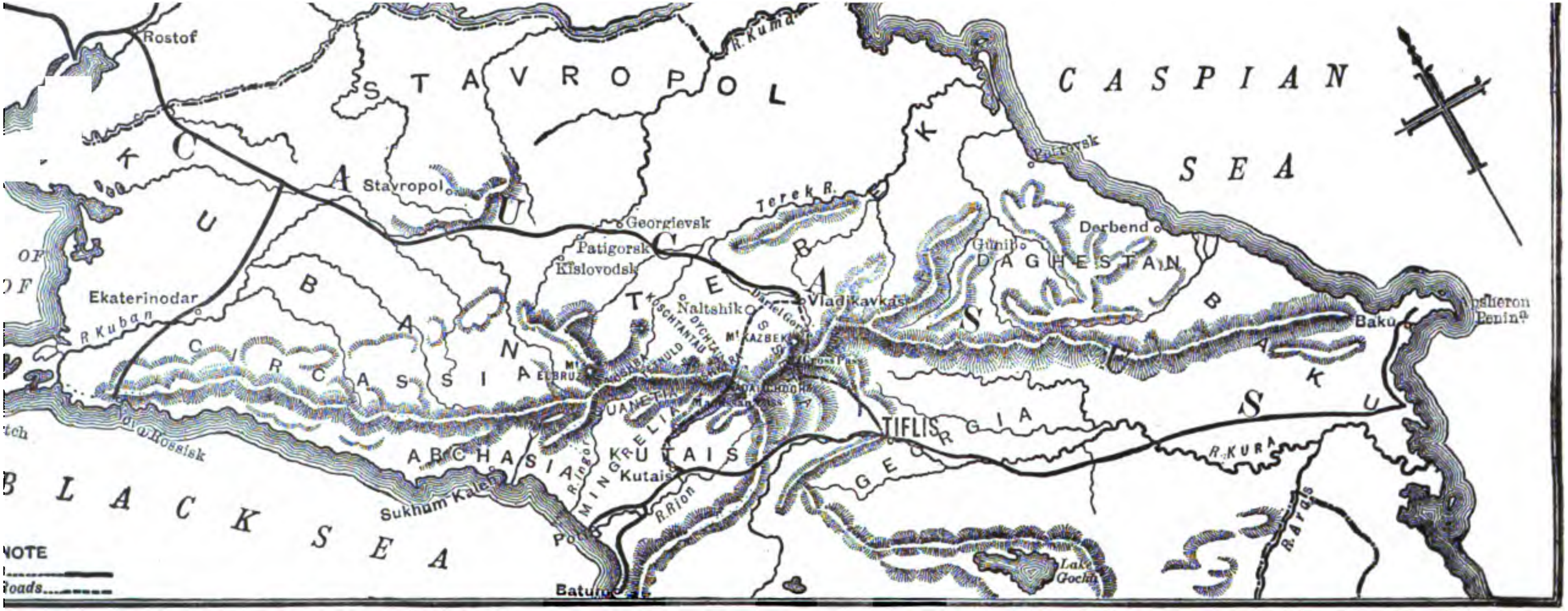
There are signs on the flanks of Mount Lozère and Mount Aigoual that glaciers once rested there. If so, the floods resulting from their periodical melting would, in their natural course, owing to the inclination of the ground to the southwards, flow over these calcareous tablelands.

These wonderful monoliths, standing on the edges of the Causses, cut into such fantastic shapes, while striking examples of the corrosive power of water, doubtless owe much to the composition and character of the rock itself.

The upper dolomite has friable sandy veins running through it, is but slightly homogeneous, and is very unequal in compactness, and thus the eroding power of water is aided by the instability of the rock itself.

Time and your patience will not, I fear, permit me to enter into many other questions which a study of this curious region offers to us, but I hope I have said enough to arouse your curiosity and interest in the district I have endeavoured to delineate.

I have said nothing of its bone caverns or prehistoric treasures, nor have I attempted to compare its phenomena with similar ones in our own country, in Europe and the United States, as each district has its own speciality and *facies*, which it is ungracious and useless to put into terms of comparison.



SKETCH MAP OF THE CAUCASIAN RANGE.

THE FORESTS OF ABKHASIA.

By **DOUGLAS W. FRESHFIELD**, Hon. Sec. R.G.S.

(See Map and Illustrations.)*

[Addressed to the Members at the Memorial Hall, Wednesday, March 5th, 1890.]

I HAVE recently described the mountain ranges and valleys of the Central Caucasus at some length in the pages of the Proceedings of the Royal Geographical Society (see volumes for 1888-90), and to these I must refer those of my readers who may desire a groundwork for the following notes of a journey from the mountain district of Suanetia, lying at the source of the Ingur, to the Black Sea at Sukhum Kaleh.

Baksan Tartars at Urusbi.

Last summer (1889) I spent, with my companion Captain Powell, a week as the guest of Prince Atar Dadish-Kilian, the head of the native family who once ruled over the lower part of Suanetia, and are still its greatest proprietors.

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* The Map and Illustrations to this Paper are used by the kind permission of the proprietors of the *Graphic*. (See "The Peaks and Glaciers of the Caucasus," by Douglas W. Freshfield, F.R.G.S., in *Graphic* of August 24th, 1889.)

Ezeri—the Prince's residence—consists of a number of detached towered hamlets, spread over a tract of broad sunny meadow-land some 6,000 feet above the sea, and a few miles west of Betcho, the centre of Russian rule. Beyond the Ingur rise the snows and forests of the Leila, in one of the glens of which the Prince has his horses at pasture. To the N.E. Ushba shows its enormous twin tusks over the green hill-shoulders, and down the valley there is a view of the hills and valleys of Lower Suanetia, closed by the fine peak hitherto called Dotur.

Here we lay in luxury on Turkish divans and fared sumptuously all one Sunday, while the villagers feasted feudal-fashion on the green, and Suanetian damsels sang the old ballads of the country and danced strange dances, till midnight brought a heavy supper on to the long table in the hall, where we sat in carved chairs that would have made an appropriate dining-room suite for Macbeth—*à la* Lyceum—waited on by a line of tall vassals who joined from time to time in the conversation, like retainers in Walter Scott's novels.

After a successful first ascent of the Leila (*circa* 13,400ft.) we were ready for the most novel part of my last journey, of which I propose here to give some account.

It had for years been a matter of curiosity to me to penetrate the "No Man's Land" west of Suanetia and between the rivers Ingur and Kodor. Mr. Grove, in his capital book, "The Frosty Caucasus," published in 1875, had quoted the tales told by the Urusbieh hunters of their great hunting ground. He had written on his last page: "Of a great tract of magnificent country, scored by deep valleys, watered by powerful streams, and covered by a mighty forest. It has no inhabitant whatever so far as we could learn, and the solitude of the district is only disturbed when a few hunters from the north venture into it after the game, in which it is said to abound. There would be difficulty, no doubt, in exploring it, and danger from malaria; but some hardship might well be undergone, and some risk run, to see these magnificent untrodden glens."

Such a description was in itself well calculated to stir curiosity. But all we heard on the road only added to the mystery of the Great Forest. Russian officials gravely repeated strange tales of a race of wild men who had no villages, but appeared naked and gibbering in the depth of the woods, who lived on berries, and were without firearms. One informant added precision to the tale by assuring us that these creatures were the offspring of *crêtins* banished in old times out of Suanetia.

Fifty years ago an Englishman, a Mr. Spencer, one of those who instigated the Circassians in their struggle with Russia by holding out expectations they had no power to fulfil, wrote a distressingly vague account of his passage through this region, where he describes the chamois as looking down on the traveller from every crag, as squirrels might from English trees. We did not see a single wild animal. But any practical or recent information was hard to come at. Footmen did pass rarely to Sukhum "by way of Neskra and Darl." That much we at length elicited, and Prince Atar promised to procure us the two hunters who knew best the tracks in the forest.

Wild creatures these hunters proved, yielding to every impulse, little accustomed to any form of control, and with the half-savage, half-childish demeanour general in Suanetia twenty years ago. They had charge of two mules, which carried our tent, luggage, and provisions for a week. One of these was nearly as unruly as its leader, kicked furiously at every steep hill, and bit at anyone who tried to guide it in the tangles of the forest. With this unpromising staff we plunged down from the last villages of Suanetia into the valley of the Nakra, leaving on our left the path, impassable for horses, that follows the Ingur to the lowlands, and on our right the comparatively beaten track that leads across the chain to the Baksan and Elbruz by the Dongusorun Pass.

I cannot go through in detail our next six days' wanderings in the wilds. We had first to cross two deep valleys only 3,000 feet above the sea and two ridges of over 9,000 feet. The first glen—the Nakra—was passed without any excessive difficulty. We camped at about 8,000 feet, among dwarf birches, on the upper verge of a great beech forest, in presence of a view I shall never forget of the whole of Suanetia, backed by its great mountains. In the night our tent was assailed by a terrific thunderstorm. The wind and hail beat against it like mad things, while our hunters cowered under the canvas screaming, "We are lost, lost, lost!" Next morning we woke to see the day break above the black edges of the retreating storm, already far down on the eastern horizon, while in front of it the great white crests of Shkara and Tetnuld rose clear and cold above the still shadowy valleys.

Next day we crossed a grass-pass, and plunged into the second valley, that of the Neskra. Here our unfortunate mules were called on to ascend and descend slopes made up of slippery roots and boulders, which a man could hardly master without the help of hands. One of the hunters resented hotly my suggestion that he might help his mule by himself carrying something, and we found ourselves facing one another with drawn dagger and revolver; a foolish situation, as neither of us meant business. In the evening, I ought to add, the man came and made a suitable apology. Drawing his dagger is, to a Suanetian, the same sort of relief to the feelings that "giving warning" is to an English domestic, and in both cases nothing serious is often meant by it. The track had now disappeared in the forest, or was only from time to time faintly discernible. We reached in the afternoon a bridge over the Neskra torrent. For hours we had been under timber too dense to admit of any view, even of the sky. Now, we were lost in a tangle of fallen and rotting trunks, surrounded by prostrate pines of enormous length, hardly passable even on foot. In the centre of this natural fortification (I am not sure it was entirely natural) we

Shkara.

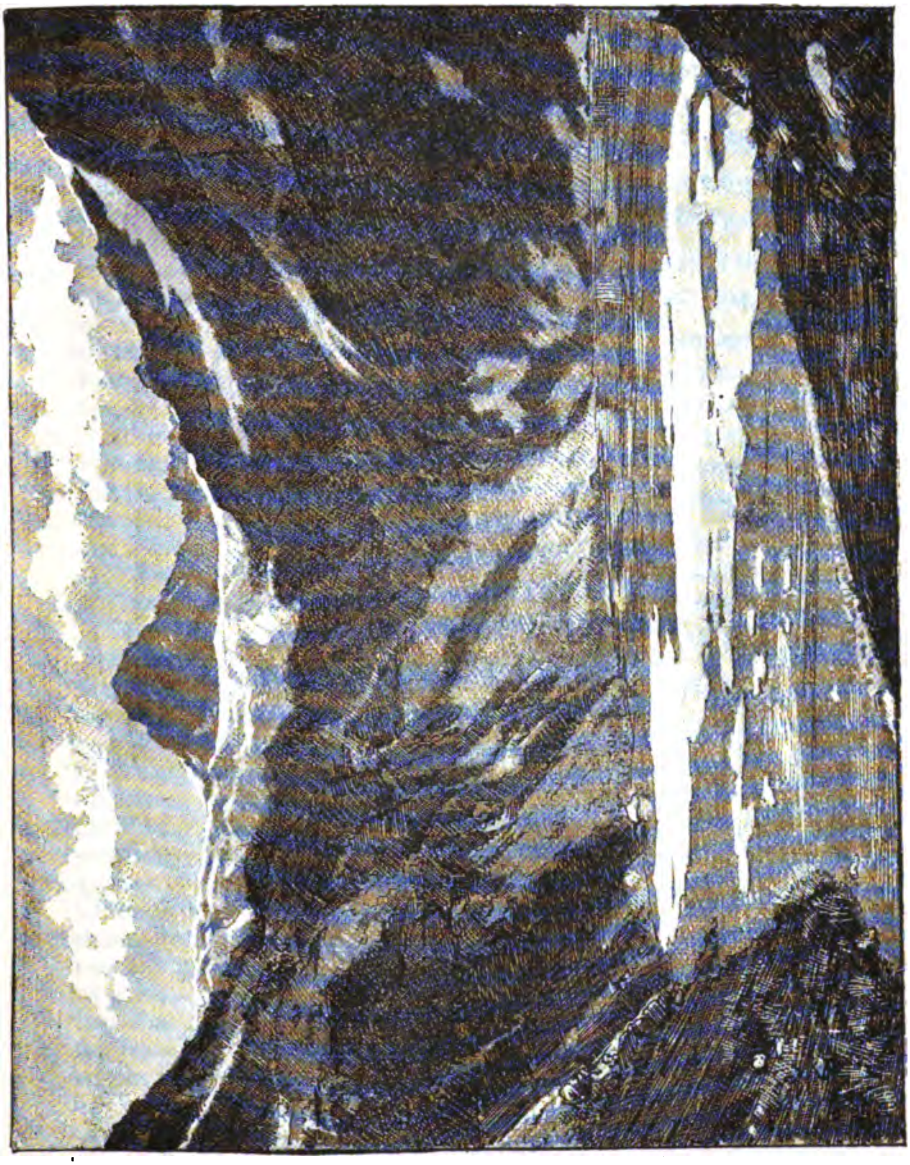
found a maize field and a lodge in the wilderness. We called it "The Outlaw's Home," and it was perhaps as good a name as another. It is certain that this trackless forest is the resort of anybody who gets into trouble. Before we set out, Prince Atar had twice solemnly warned me to keep our party together, as a forester might take one of us for an official and pay off old scores. I am afraid the caution was often disregarded, owing to my companions' taste for raspberries, which abounded in every clearing.

Tetnuld from above Mulakh, Suanetia, showing an ordinary Suanetian Village.

It rained hard next morning, but we were hardly conscious of it, except from the absence of any glinting lights in the forest gloom. There were three foresters in the hut, friendly fellows, who brought us maize pods to roast, and helped us up hill with our mules through the most extraordinary scramble over prostrate timber, up torrent-beds, and along forested hillsides as steep as nature could make them, and thousands of feet high. At last we emerged on the sloping open downs above the forest. The rainstorm had passed, the sun shone, and we rested happily under a pine till one of our wild children of nature set light to the inflammable moss on the lower branches. In a moment the whole tree was a pillar of flame, and we had hardly time to carry our few packets out from under it.

We were now on the edge of the broad high pastures separating the basins of the Ingur and Kodor. We could see the glacier of the Neskra, and but for clouds should have seen Elbruz over it. The downs are very broad, and took several hours to traverse. We were further delayed when our walking mutton seized an opportunity to run away. From the crest, which we reached early the following morning (the fourth day in the forest), we had a glorious prospect, and gained a further insight into the character of this strange and splendid country. In the rear we could still see the Suanetian mountains, separated from us by the blue depths of the forest gorges of the Nakra and Neskra. To the south lay a tangle of dark wooded glens, through which, like land out of a sea, rose the green pasture heights which link the rocky spurs of the great chain to two bold glacier-streaked groups lying far to the south-west of the Leila, on either side of the gorge of the Ingur, and comparatively close to the sea. Their glaciers may be compared to those of the Marmolata, in Tyrol. They have never yet attracted any notice from map-makers or travellers. Out to the west, from our very feet, stretched a spacious valley, filled, as far as the eyes could reach, with vast forests, and without sign of path or human habitation. It was ringed by rugged peaks and snowfields, mountains of 12,000 to 14,000 feet, small compared to those of Suanetia, and bearing to them the same relations the peaks west of the Gemmi do to the Bernese Alps, but fine mountains enough, tried by an Alpine standard. This was Darl, the upper valley of the Kodor. In the main chain we noted the source of the Kodor in a small glacier under a blunt rock peak; then a cluster of granitic teeth was followed by the gaps of the Kluchor and Nachar Passes, about 9,000 feet in height. Beyond these came a broad snowy mass we saw afterwards from shipboard, and then the sharp peaks round the Maruch, one of which is over 14,000 feet high.

In all the vast landscape there was no sign of permanent dwelling. Its only denizens were a few hunters or outlaws in the woods, and a few Abkhasian shepherds on the hills. To a group of these we now hastened, for our Suanetians confessed that they were altogether beyond their beat, and the ground below us was trackless. We got a handsome lad—a Paris of shepherds—to show us the right path along a narrow hog's-back



Ice Lake below the Kluchor Pass.

bright with crocuses. At the first water he left us unawares. The way in which, in apparently desolate places, in the Caucasus, visitors appear and disappear again has often reminded me of the habits of Homeric gods and goddesses. We had hoped that our difficulties were over, but we soon missed the road where a lateral torrent joined the Kodor. We lost all path, and soon got into thicker and thicker forest and greater difficulties. Our Suanetians sang, "We are lost, you are lost, the horses are lost," in amœbæan strains. At last we found ourselves at dusk in a tight place, between cliffs and the unfordable Kodor. We camped in a dank thicket, tired out with path-finding. Next morning Powell and our Swiss Maurer laboured manfully to build a bridge, but the Kodor made sport with their handiwork. We gave up the attempt and went back. Two hours higher up we found, after much search, a single trunk spanning the river. We crossed it, and roped and swam the mules. After many more hours of torrent-bed and forest we came, in the afternoon, to a broad stream barring our way, the Klutch. On the further bank we saw a good mule road, and a party of Mingrelians with unladen animals passing along it. After some parley they consented to help us over. We found we were on a military road that is being constructed from Sukhum to the Teberda, over the Kluchor Pass. We did not succeed in reaching the solitary station of Shkaltra that night. We camped beside the Kodor, in a wild orchard of fruit trees, where the ground was golden with fallen plums, and pears and walnuts abounded with no one to eat them, for the bears, traces of which were frequent, prefer raspberries.

Next day we rode into Shkaltra. It had been described to us as a post-station where everything could be procured, including horses. We found a solitary house, inhabited by a single Mingrelian down with the fever, which is the curse of this lovely wilderness, and utterly helpless. The mosquitoes and the sight of this sick man seemed to put the last touch to our horsemen's discontent, which had been growing with their distance from home. To cut my story short, as they did their leave-taking—they bolted. Jumping on the Prince's mules they suddenly cantered off, yelling triumphantly, like, what they were, naughty children, as they disappeared from view. They had not much apparent ground for exultation, for they had no pay and no food. Our meal had come to an end, and they would have to rely on robbing a maize field near Shkaltra, or wild fruit, and on the shepherds they might meet on the hills. But what is food to a Caucasian? The shepherds never see bread from spring to autumn, and very seldom treat themselves to meat.

We left our Swiss with the luggage, and walked on to Lata, the next post, twenty miles farther. There we found a friendly official, help, and horses.

In this rapid summary I feel I have given a very inadequate impression of our week in the forest, of the gigantic pines and beeches and alders, the thickness of the undergrowth of laurel, azalea, and rhododendron; the luxuriant gloom and "shady sadness" of the vales; the wide splendid landscapes unrolled from the heights; the morning light shining on a hundred ridges and resting on the fair face of distant snows; the delicate embroidery of alpine flowers spread under our feet; the scale and spaciousness of the scenery as a whole, and the delicate picturesqueness of its details.

What is to be the future of this earthly paradise—the Western Caucasus? Its old inhabitants are gone. The Abkhasians have been exiled for a quarter of a century, and their villages and their tombs are alike lost in the glorious vegetation that feeds nothing but bears and mosquitoes and fevers. Some day, perhaps, this garden of the earth will be repeopled. As yet the government is lukewarm or unpractical. Emigrants, Greek or German, arrive but slowly, and their families too often suffer severely from the fatal fever. There is little in the surroundings, moral or physical, to encourage that energy which tames Nature to human uses. Nature, on the contrary, is triumphant; not a virgin nature, but a Circe who stands ready for all new comers with a cup of Colchian poison in her beautiful hands.

Such are the first impressions of a passing traveller. Others, I hope, will see more of the little-known interior of the Western Caucasus. Sukhum is a tiny town of 1,300 inhabitants; but it has a good inn, and is a station of the Indian Telegraph, and Englishmen in charge are permanently resident there, and would doubtless speed travellers to a start. Further west, at the end of the chain, Novorossisk, the new port where corn vessels are laden directly from the wharves, is rising rapidly to importance. In the interior the old native paths are falling into disuse, but military mule-roads cross several of the passes. From Sukhum there are two such roads northwards, the Maruch and the Kluchor, leading to the Teberda and Karatchai; and there is, I believe, a third leading west. The forest scenery may grow monotonous, but granite peaks and glaciers extend some distance west of Sukhum. One great glacier (14,255 feet), resembling in form the Wildstrubel, a few miles west of the Kluchor, is superbly seen from the Black Sea, a broad silver shield studded with black bosses of rock and seamed with the faint lines of crevasses. This must have been the strange sight the Greeks noted as they sailed up the Phasis or into Dioscurias, and told stories about Prometheus or Jason. The sea at Sukhum, after any great storm, still casts up some of the loose coins left behind by these old mariners.

THE FJORT:[*]

THE MANNERS AND CUSTOMS OF THE NATIVE CONGO PEOPLE.

By Mr. R. E. DENNETT, Author of "Seven Years Among the Fjort," of Banana, Congo.

[Read to the Members, in the Library, October 11th, 1889.]

One can hardly, perhaps, call Nkissism a philosophy, in the sense of its being a search after wisdom; for a native is satisfied by calling anything he cannot see or understand among things physical, Nkiss (or mystery?), and for him that ends the matter. He acknowledges that there *is* something beyond his comprehension in these things; but he does not dive into the depths of metaphysical philosophy, nor does he ever seem anxious to do so. Customs, habits, accident, and a gradual accumulation of knowledge have taught him much, and he does not forget his lessons. I think that is all the credit you can give him. Tradition has handed down certain cures for diseases, discovered, probably, by accident, or intuition, or observation; he has divided his year into two seasons—one of rain and one of sun; his month into two parts—one of darkness and one of light, or into seven weeks of four days each. You cannot call him unobservant nor yet studious. The prophets of the Hebrews, the wise men, magicians, or soothsayers, the astrologers of Egypt, Phœnicia, Chaldæa, the Brahmin or Buddhist of the Hindoo, have their unworthy and revolting equivalent in the nganga of the Fjort. Pyramids, tombs, and statues with inscriptions, upon which more light is daily being thrown, in Egypt and Chaldæa, have their equivalent in the many Nkissisi, Nkissi, Nkissakiss of the Fjort; but who is going to decipher the "wisdom" of the Fjort from such a record of their history? What, if instead of having to rely on half-forgotten traditions related by old men of the tribe, or on one's own meagre observation, one could address the green spots of grass, reverenced or worshipped by a tribe or family, or wooden figure (Nkissisi) that has been in constant communication with the head of the family since it was a family, or if one could ask the thousand and one nails so securely driven into the Nkissi, or figure of the tribal god, what they were placed there for, and by whom, or even if we could get the tiny Nkissakiss, or figure, or charm, borne by an individual, to let us into the secrets of his master, why then we might bring Nkissism up to the level of a philosophy. As it is, each one of us must try to observe, and report, even if we have to report what, to many, may seem rubbish, in the hope that some of you, who, indeed, may be philosophers, may pick up a grain or two of knowledge, that in your wisdom you may extend and swell into something like an intelligent account of Nkissism. I tried, by endeavouring to describe the Nkissis, Nkissi, and Nkissakiss, and also the life of an ordinary native, to give you some idea of Nkissism as it is. It seems, however, that some people consider my attempt a failure, perhaps because my explanation was not full enough, or perhaps because my ideas do not coincide with the reader's preconceived notions of Nkissism, which very term is questioned, as if I had manufactured a new name for what a common herd of ignorant sailors have, in their conceit, termed witchcraft or fetichism. There are many men, as I have admitted, who could, if they would, give you a better idea of Nkissism than I can, but they do not seem inclined to trouble you, so I shall continue to write as much as I can about it, and you may deduce your own theory.

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[*] Fjort, a people inhabiting the north-west banks of the Congo. Nkissism is the name of the religion or superstition of the people, or probably, in a more or less modified form, of all the people in Central Africa who have not embraced Mohammedanism. Nzambi is the supreme good god. Nkissi, the god of evil. Nganga, the doctor, or surgeon, or priest-doctor, of the Fjort.

Has Fjort had a "divine teacher" and forgotten him, or has he never had one, and merely been following certain delusions?

The ngangas, or priest doctors, certainly pretend that their knowledge has been originally communicated to them by some spirit, their knowledge, such as it is, being some secret handed down to them—the cure of some sickness perhaps. This slight knowledge is carefully guarded by them, only the old nganga of the tribe, or village, and the man who is to succeed him, having any knowledge of it. They both wear distinguishing ornaments. As there are many evils to avoid, and the secret cure for each is perhaps only known to a few, it follows that there are many ngangas. The ngangas know their superiority to the people, and they make them feel it, until the people have become their very servants. Every new discovery widens the distance between the nganga and the people, and encourages the nganga to still further impose upon the people, until at this time we cannot suppose that Nkissism is the pure belief it once may have been. We may presume that there was a time when (1) Nzambi alone was known to Fjort. (2) Then sickness overtook poor Fjort, and he suffered pain. This he did not understand. It was not good. He feared it. At length he died. This was terrible. He fell prostrate, and raised this mysterious evil to the level of a god. Chance or observation raised up a doctor, or surgeon, or as (3) Fjort calls him a Nganga Nkiss. (4) Fire burnt him, water drowned him, without rain he hungered, sickness puzzled him. (5) The evil in fire could be avoided, as also that in water, he could pray his Nkississi to send him rain; but sickness, the main cause of much-dreaded death, he could only avoid by the help of the Nganga Nkissi (6) How did the nganga cure him? By the help of herbs. Then, as only the evil spirit could cure the evil he visited them with, Nkiss must also dwell in trees, and plants, and herbs. (7) But now that evil was discovered in herbs, it struck Fjort that perhaps his brethren put this poison in their food, and that this was the secret cause of all their sickness and death. (8) Up to the present we have only heard, "Anje Nkissi quiarko," or "You have Nkissi" (evil, pain) if you are wicked. (9) But now we begin to hear, "Anje lendorchi quiarko," or "You have poison in you," or "You are a poisoner." (10) And now is the time when all the powers of the ngangas (ministers of Nkissi, or the god of evil), we can imagine, had full play, and they commenced to impose upon the people by setting up their wooden images (not of Nzambi) of Nkissi, into which the petitioner making his complaint drove a nail, and paid the nganga his fee. (11) Up till now probably the head of each family was the only nganga, but hereafter their name is legion, and every means of avoiding the supposed evil Fjort continually feared was resorted to, as an instrument of extorting money from him. (12) Hence the institution of the personal god, or charm, or Nkissakiss, or little Nkissi, which is so heavily laden with malongas or medicines, and is the boon companion of every Nkissist, hence the food in actions forbidden or "Chinas" or "Kazeelas.

It is strange that the translation of the native word Nclotschi by the Portuguese sailors of old, into "feeticiers" should have been adopted by the natives until now we are obliged to use the words "witch," and "witchcraft," or fetishism, to describe the

Nclotschi and Nkissism of the present day. The English have heard the natives talk of poison "Ngilly," and this being what the Nkissikissi are charged with, the Nkissikissi is termed by them "gilly-gilly."

We must perceive that Fjort has been baffled, but "we must make the discovery with sympathy, not exultation." Baffled, yes, and perverted, led away by fear and superstition, to worship what he most feared—the evil spirit Nkiss. Nzambi was too good to cause evil, although Fjort died according to his will, and could not die until he wished it. Nkiss, who visited Fjort with all sorts of evil alone, he thought, could prevent this evil from coming upon him. Fjort, therefore, beseeched Nkiss not to let evil overtake him. Thus the real greatness of Nzambi faded away in the presence of the fearful Nkiss, until, as at present, the latter is the god. But how did Fjort thus become acquainted with the good Nzambi and the evil Nkiss? It is impossible to penetrate through the vagueness of the Zendavesta, and to detect what was latent in the minds of of those who composed it or believed in it. How much more impossible is it to fathom the unwritten thoughts of those unknown nganga who have made Nkissism what it is? Although Fjort acknowledged a good and evil spirit, the idea of a struggle between the good one and the evil has not as yet struck him. He is waiting for a great nganga, for a Zerduochi, or a Khoung foutsen, to point out to him the power of the good one. Who shall be his prophet—a follower of Christ, or of Mahomet? The word or the sword, gentleness or fear? Which, I ask you, is the most likely to bring poor Fjort the nearer to his God? Will the sword go before and prepare the way for the Word? How far then is Fjort still from the end of the struggle (which we in common fight with him)? How long will he be in getting an answer to the question that even puzzles some of us? How long must he fight before he can find rest? It is strange that Indian, Chinese, and Persian reformers appear to have believed that they were bringing back some old order or principle which had been violated, or for which some modern practices and notions had been substituted. It is strange, that by the writings of the most ancient African missionaries, it is an established fact that the name by which the good spirit was known to Fjort was Nzambi Mpongo. It would appear as if at one time God had revealed Himself to *all* mankind; but that just as the children of Israel, with all their advantages, fell into idolatry, so the other children of men less favoured had fallen away. Then in the struggle that follows the spirit of God is apparent in the reformers of the different faiths. Man, as it were, "in the sweat of his face is eating his bread," for by the study of our greatest thinkers, and that alone, little by little, is he learning to know himself and his position with respect to his God. Every day our minds are being shocked by new theories that shatter long-lived dogmas. We then are not yet perfect. Cannot we then sympathise with Fjort, who as yet has not turned the corner, and hope that time and a reasonable course of training may do for him what it has done for us.

Do you think that we should throw away the lessons, which, in our progress, we have learnt, and attempt, by some conjuring, to make poor Fjort spell "thought" before we have taught him English or even his A B C? Can we, who practice Christianity so poorly, after a trial of 1888 years, expect to make Fjort a Christian in a day? Are we to teach him Latin, Greek, singing, and abstract Christianity, before we have taught him what earth, fire, water, and life are? The earth in Iran was overgrown with weeds. Nothing was done to till it or make it fruitful. Slavish dependence upon seasons. All this we find in Africa. Surely Fjort needs someone to prove to him that the earth is meant to produce good, that the bad is to be weeded out. But after all, though poor Fjort has been on the wrong track, there is enough good in him to humble so-called Christians; enough nobleness in him, too, at times, to shame our cowardice; enough endurance to make us wish for more; glimpses of virtue enough to prove to all but the wilfully blind that there is One far above us all, from us all, from whom there pours a stream of light, that searches all our hearts—a fountain of love, joy, peace, long-suffering, gentleness, faith, self-control, and goodness.

Should you not first teach Fjort that his creed is a lie, and prove it to him, by showing him that the poison the earth brings forth can be rooted out, and the earth made fertile?

First agriculture, then commerce, and such useful trades and arts as are necessary to a community living in peace; then education, so that as he came to know more of his surroundings his fears of Nkiss would subside; then teach him the love of God, and then Christianity.

Naphtha Springs at Baku.—*Deutsche Rundschau*, Bd. 12, Heft iii., contradicts on official authority the reports that the wells at Baku are beginning to fail. The yield in 1888 was nearly 2,843 tons of raw naphtha, about 15·1 per cent more than in the preceding year; while up to August 1st, 1889, the quantity obtained was 57½ tons more than during the same period of 1888. The rise in price is due to the increased number of distilleries owing to the ever-increasing demand for the residuary products. The 240 or 250 borings now working are insufficient; 150 more might be added with advantage.—*The Scottish Geographical Magazine.*

M. Camille Douls.—France in the past year has had, like Germany, to mourn the loss of a young and intrepid African traveller; for Camille Douls, distinguished as the explorer of the Western Sahara, appears to have been treacherously assassinated while making his way across the desert to Timbuktu. M. Douls was born at Bordes in the department of Aveyron in 1864, and received his education at the Lyceum of Rodez, the capital of that department. In 1881 he visited the Antilles and Central America, and four years later, Marocco, where, during a residence of some length, he studied the language, manners, and customs of the Arabs. Here he conceived the bold idea of exploring the hitherto unknown western parts of the Sahara. In prosecution of this design he passed over to the Canary Islands, and there engaged the services of some fishermen to take him over to the desert coast, in the neighbourhood of Cape Garnet. Having been landed there in safety, he proceeded inland, alone and in the disguise of a Mussulman. He soon fell into the hands of a nomad party, and only saved his life by agreeing to profess Mohammedanism and become a member of the tribe to which his captors belonged. With this roving band he travelled over a great part of the Western Sahara, reaching the tropic of Cancer and finally making his escape over the Atlas to Marocco. Here, however, he was imprisoned by the Sultan, and only regained his liberty through the interference on his behalf of the British Minister. After this he came to London (in 1887), and published in the *Times* newspaper a narrative of his romantic adventures. Appearing before the Royal Geographical Society, he exhibited a rough route-map of his wanderings, which embraced wide tracts previously quite unknown. Having next year returned to his native country he there obtained funds to enable him to undertake a second journey, and for this purpose he left Paris in June, 1888. News afterwards came that a traveller, in the disguise of a Mussulman, had been murdered by his guides in the Sahara, between the oases of Alouef and Aklabi, which lie about 560 miles south from Oran on the Mediterranean coast. There can be little doubt that this unfortunate traveller was Camille Douls. It would appear that he reached the desert by way of Tangiers and Tafilet. It was his great desire to emulate the deeds of René Caillé, who some seventy years ago made himself illustrious by his explorations in the same desert. (Subscriptions are being raised for a monument to this explorer.)—*The Scottish Geographical Magazine.*

THE NEGOTIATIONS OF DUKE FREDERICK III. OF HOLSTEIN-GOTTORP WITH RUSSIA AND PERSIA, CONCERNING THE SCHEME FOR BRINGING THE PERSIAN TRADE THROUGH HOLSTEIN-GOTTORP (1633-1640 A.D.)*

[Read to the Members, in the Library, Friday, December 20th, 1889.]

In the midst of the horrors of the Thirty Years' War, Duke Frederick strenuously endeavoured to preserve peace in his dominions, but finally was drawn into the strife, and then set himself the task of repairing the widespread damage which war had caused in his dukedom. His ceaseless efforts in this direction, unfortunately, were not always rewarded by success, and many misunderstandings arose.

Among his various projects having this object in view was the one by which he endeavoured to give new life to the commerce of his dukedom, and especially to attract the Persian silk trade to the newly-founded town, Friedrichsstadt. It was the time when the English, Dutch, and Danes were endeavouring to open up new routes, with reference more particularly to the trade of the Levant.

The King of Denmark had, in 1618, fitted out an expedition to the island of Ceylon, which in its results implied a challenge to the Duke, which he could not but accept, for it affected seriously the interests of the new town, upon the prosperity of which the Duke had set his heart.

Friedrichsstadt owed its origin to the tolerance shown by him, at a time when religious intolerance was rife. In 1609, the Synod of Dortrecht, in Holland, gave its decision in the dispute between the Gomarists, or strict reformers, and the Remonstrants, which was unfavourable to the latter, and from that time they suffered from so many oppressions and persecutions in Holland that a number of them expressed a desire to found a new home elsewhere, and turned to Duke Frederick for assistance. His reply was favourable to the design, and, besides informing them that their religious opinions would not be allowed, so far as he was concerned, to interfere with their transmigration to his dominions, he gave them permission to found a new town on the banks of the Eider, at the mouth of the Threne.

By decrees of the 27th September and the 17th November, 1619, the Duke, in spite of the objections of the court chaplain, Jacob Fabricius, granted to the Remonstrants the free exercise of religion, and other important privileges, for the new town.

In 1621 the first steps were taken towards the founding of the town, which was to be called Friedrichsstadt, in honour of their protector. The Duke allowed his new subjects to draft their municipal constitution in accordance with their own ideas and customs, and they sketched out for themselves their police arrangements and municipal bye-laws, and on the 20th March, 1635, their constitution and privileges were confirmed by the Duke.

As was to be expected, the new town, so favourably situated for trade and navigation, rose suddenly into importance, giving a favourable opportunity to the opulent Dutch colonists to turn to good account their commercial spirit, and the employment of their combined capital; for the Dutch at that day, as well as in our own times, had the reputation of being good business men. As a consequence of these circumstances, and the favourable influences at work at the court, the new town presented so vigorous an appearance as to remind one of the older Dutch cities, and came to be called a second Amsterdam, which character it still retains.

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* From the "Geschichte des Hauses Holstein-Gottorp," by the Chamberlain F. von Krogh. MSS. Translated from the *Weser Zeitung*, October 8th, 1889, by T. W. S.

About this time there appeared at the ducal residence of Gottorp one Otto Brüggemann, a wholesale merchant of Hamburg, who, having obtained access to the Duke, received authority from him to attempt to open a new route for the commerce of the Levant, which should bring the trade through the Duchy of Holstein-Gottorp.

The trade of Persia was, at that time, of great commercial importance, and Persian silk, which was then unexcelled for fineness, strength, and lustre, was one of the principal commodities. These goods, as well as the East Indian products, which partly came through Persia, were burdened out of all proportion with costs of transport, besides being, at the same time, subject to great risks. The route was by caravan from Persia through the Turkish provinces to Smyrna, and thence by sea to Europe, and of course customs dues had to be paid on the transit of the goods through the Turkish dominions.

The first thing that Brüggemann had to do was to discover how those heavy charges could be avoided, or even reduced. A necessary preliminary for the solution of this problem was the release from duty, not only of the transit of goods through Persia, but also on the exports from Persia itself; and only on some such basis as this could the negotiations with the Shah be commenced.

A further supposition of the Brüggemann scheme was the restoration of a waterway through Russia. For the accomplishment of this, the great rivers of Russia, connected by canals, should be utilised; but for this to be done it became necessary to interest Russia in the scheme, and negotiations had to be opened with that country: and it was only upon the hypothesis of free exports from Persia, free transit through Persia and Russia, and of the formation of the waterway through Russia, that the new route would effect a sufficient reduction in the cost of transport of the Persian manufactures and the Indian products for it to have an assured success. If this line of transport could be established, it would undoubtedly open up a bright future for the merchant towns of Holstein-Gottorp, and especially so in the case of the new town of Friedrichsstadt.

This was the scheme which Brüggemann laid before the Duke, the accomplishment of which did not appear impossible, and the success of which meant so much for his dominions, and it remained for him to determine whether the experiment should be made, and if so to despatch special embassies to the Shah of Persia and to the Russian Emperor to commence negotiations.

The Duke declared himself favourable to the scheme, and was prepared to devote both time and money to its completion. He realised that a project which would end in attracting the trade of the world through Southern Schleswig must tend to strengthen his authority.

The leadership of the embassy was entrusted to the ducal councillor, Phillipp Crusius, who was well known as a man of deep insight, and he was to be guided by Brüggemann in the working out of the scheme.

In addition to the chiefs the embassy was to consist of a marshal, a counsel and secretary, equerry, physician, chamberlains, chaplain, four gentlemen-in-waiting, four ducal pages, four other pages, musicians, various artificers (such as watchmakers, saddlers, gunsmiths, tailors, and shoemakers), halberd bearers, and a number of servants for the kitchen, for the horses, and to wait upon the members of the embassy. Adam Olearius, the learned librarian of the Duke of Gottorp, was appointed counsel and secretary, and to this we owe his celebrated work, "Beschreibung der neuen Orientalischen Reise," which gives a vivid description of the state of Russia in those days, and is of great value as a contribution towards a history of such towns as Riga and Reval, and has been recognised as an authority even in much later times. The *enfant terrible* of the expedition, Andreas Reusner (who joined it afterwards), upon the return journey, withdrew to Sweden, where, by indiscreet and not altogether true communications, he caused the embassy to be wrongly censured by the Duke.

Instructions were given to Brüggemann and Crusius how to deal with the Shah of Persia on the question of freedom for the trade, and, considering the prevailing discord between Persia and Turkey, it is probable that the discussion would be directed to the question (which would be of great importance to the Persian government) as to how far the success or failure of the scheme would affect the income from transit dues of the two countries, Persia and Turkey.

The Duke was not fortunate, however, in his selection of the men to carry on the negotiations. Brüggemann went beyond his instructions and completely compromised the Duke; the official director of the embassy, Crusius, was unequal to the task of leading so important an expedition; and the various members of the embassy were so at loggerheads with each other that quarrels and dissensions arose on every hand. Apart from this the embassy was despatched with carefully-prepared instructions, which left no doubt as to the intentions of the Duke upon the methods of working out the project, upon the establishment of trade, and as to the early completion of treaties with the Russian government.

The embassy left Gottorp on October 22nd, 1633, Hamburg on the 23rd, staying at Lübeck on the 24th, and on the 27th embarked at Travemünde for Riga, where they arrived on November 14th. The stay here lasted for five weeks, during which time, on the 21st November, the embassy made important presents to the Council of Riga, including an ox, several sheep, fowls, hares, deer, bread, and an ohm of Rhine wine; and on the 24th they were the guests at a brilliant banquet. From Riga they set out for Dorpat in thirty-one sledges for the baggage and guides, and in fifteen for the embassy proper. From Dorpat their journey lay through Narva to Reval, and on the 14th August, 1634, the embassy entered Moscow, where, on the 19th, they were received in public audience by the Grand Duke Michael Feodorowitch Romanoff. To their surprise, the Grand Duke unexpectedly brought forward counter proposals, based upon conditions which the embassy could only accept *ad recipiendum;* and as he insisted upon the concession of his terms, the embassy decided to return to Gottorp, when they reported to Duke Frederick, and eventually induced him to accept the terms of the Grand Duke Michael.

Then commenced their second journey to Moscow, where, on the 3rd April, 1636, they were again received in audience by the Grand Duke. The journey towards Persia was commenced on the 9th June, and they entered Ispahan on the 3rd August, 1637. The return journey to Gottorp was commenced on the 21st December in the same year, the embassy going *via* Reval, and thence by sea to Neustadt, where they landed on the 22nd July, 1638, five and a half years after the date of their first departure.

The very heavy expenses connected with the expedition were still further increased by the arrival of the Persian envoy in Gottorp with a following of twenty-four persons, who lived there from July to September at the expense of the Duke, as did the Russian envoy who came to Schleswig shortly after, and remained for a still longer period.

On the part of Holstein-Gottorp it was desired that the concession of duty-free export and transit of goods should be granted exclusively to their own merchants, to which the Shah of Persia could not be induced to give his assent. On the other hand Russia demanded a sum of 600,000 thalers per annum for the concession of freedom from transit duty on these goods, and to this the Duke hesitated to agree. Lastly, to add to the trouble, the Swedish government, being wishful to secure some advantage from the project, desired a pledge from Moscow that the termination of the new route should be through the then Swedish Livonia, and not *via* Archangel. As this course would not only increase the cost of transport, but would also subject the goods to further transit dues, and having secured a pledge from Persia that the duty-free export would not be granted to any other nation to the exclusion of his subjects, the Duke resolved, rather than make such great sacrifices, to postpone the whole project, *ad calendas Græcas*. The negotiations would be broken off, but in the meantime the Duke would keep in view the possible making of a canal from Friedrichsstadt to the Baltic.

Immediately after the departure of the Persian and Russian ambassadors two criminal processes were commenced in the supreme court of Schleswig against the author of the scheme, Otto Brüggemann.

The task which the embassy had to accomplish, according to the Duke's instructions, had been to effect, by the conclusion of commercial treaties, the establishment of a route for the Persian and Indian trade across the Caspian, through Russia, and across the Baltic to Holstein-Gottorp. It was proved that Brüggemann had gone beyond his instructions, and had offered Aleppo and other Syrian and Anatolian places to the Shah of Persia to secure his support to the project. He pointed out that through the opening of the new route Turkey would be seriously damaged by the diminution of her revenue, consequent upon the withdrawal of the transit dues; and, further, that if the Turks were weakened in this manner, Persia, with a prospect of a confederacy with Christendom, might be able to successfully attack Turkey; and that the ruin of the common foe, the Turk, would clear the way for the conclusion of commercial treaties. The Shah was to supply an army of 10,000 to 15,000 soldiers, and the Duke was to send in three ships some hundreds of soldiers (most of them well versed in military matters) to act as officers. Brüggemann had further given the Shah to understand that the Duke stood in such firm alliance with the Roman Emperor, the kings of Spain, Poland, England, Denmark, and Sweden, that these Christian powers would send out separate armies by land and sea to act in consort with that of Persia.

The finding of the court was that Brüggemann had attempted to bring about an altogether impracticable, if not impossible, combination, which was in contradiction to his instructions as to the object of his mission.

He was further found guilty of allowing false evidences of crime to be brought against Adam Olearius, causing that learned man to take refuge in an Augustine monastery. And, further, that he had reopened and altered letters from the embassy to the Duke, so that he was continually deceived by false reports. Not only was he convicted of causing much unnecessary expense, but even of embezzlement to the amount of 46,000 thalers.

In addition to all this the private life of Brüggemann was made an object of inquiry by the court, and it was found that he, who had left a wife behind in Hamburg, had been living with an Armenian woman, and had been in the habit of paying visits, dressed in servant's clothes, to Armenian married women, "thereby," says the report, "bringing an indelible stain on the Christian name." And lastly, that he had cudgelled to death a Persian quartermaster, and then given over his house to be plundered. On the ground of these results of the inquiry, the court decided, "that in justice to the Principality of Schleswig the defendant must be severely punished, and held up to others as a hateful example." In the end Brüggemann was sentenced to execution, which was carried into effect on the 5th May, 1640.

This project, which had raised such great expectations, having fallen through, it became a matter of reproach to Duke Frederick that he should have sacrificed so much time and money to this adventurer, large sums of money uselessly squandered, very much to the embarrassment of the Gottorp finances.

But this plan of bringing the trade of the world through Southern Schleswig, which we here first find mentioned, continually reappears either in the form of railways or canals, and the records supply a mass of rich material for the critical examination of the history of these schemes, as well as of the idea of making the natural waterways of Russia more useful to trade by canal connections, which was followed up later on under Catherine II. and the Emperor Paul, and again with a larger amount of success in more recent times.

How firmly the Duke believed in the accomplishment of the great project is shown by the founding of the "Persian Company," which had its seat in Friedrichstadt, and was to take in hand the Persian trade, having special care of the interests of the new town, which had become, not in all things a second Amsterdam, but a place of refuge for persons of various sects and creeds, where Lutherans, Catholics, Remonstrants, Mennonites, and Jews could lead a life of peaceful concord.

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Apart from some occasional unpleasant incidents, the attempt of the Duke to make Friedrichstadt an asylum for the various religious sects has been accompanied by a large measure of success. In the founding of Friedrichstadt and the issue of the edict of the 24th February, 1625, granting the freedom of religious opinion, Frederick III., in an intolerant age, had to deal with an orthodox Camarilla, and an intolerant court chaplain in Jacob Fabricius, and the town still stands as a lasting memorial to the sincere spirit of tolerance which animated and kept him from becoming confused in the conflict between expediency and truth.

Explorations by Dr. Zintgraff in the Cameroons Region.—Dr. Zintgraff, to whose travels in the country of the Cameroons we have before alluded (Proceedings R.G.S., 1888, p. 648), has recently made an interesting journey from the Cameroons to Adamaua. At the end of December, 1888, he set out from the Barombi station, and on reaching the country of the Banyanga had to force a passage, owing to the hostility of the natives. After a compulsory stay of three months in the territory of the Bali, he proceeded in April to the Bafut, but in consequence of a threatened attack by this tribe he was obliged to make a toilsome detour of five days' march through a partly uninhabited region. At Donga his surveys come into connection with those of Flegel. The last news received from the traveller was from Ibi on the Benue (11th June, 1889), whence he intended to proceed to Jola, returning to the station in Bali-land by way of Bakundi, Gashka, and Bagnio.—*Proceedings of the Royal Geographical Society.*

Death of Dr. L. Wolf.—We hear with regret of the death of Dr. L. Wolf, the well-known African traveller, which happened suddenly on the 26th June last, in Togo Land, while conducting an expedition across the borders against the kingdom of Dahomey. Dr. Wolf was chiefly known in connection with his explorations in the South Congo Basin. In 1884-5 he took part in Wissmann's great Kassai expedition, being appointed second in command. Upon Wissmann's return to the coast through ill-health in July, 1885, Dr. Wolf continued the work of exploration, which resulted in the opening up of the Sankuru. Subsequently he was chosen to conduct an expedition into the rear of the German territory of Togo Land, where he was engaged up to the time of his death in surveying the country, founding stations and discovering fresh routes. The results of the recent excursions made by him and Lieut. Kling have been embodied in a new map of this region constructed by Lieut. v. d. Vecht.—*Proceedings of the Royal Geographical Society.*

HIS EXCELLENCY LI HUNG-CHANG, VICEROY OF CHINA.

[Note communicated by the Rev. F. Galpin, of Hankow, China.]

(See the Frontispiece to this volume.)

Li Hung-chang has been for many years the chief man in China. European and American syndicates look first and last to his excellency for concessions and contracts. Ambassadors and ministers know that without his consent their negotiations must fail. In China, too, at every crisis all China waits for his excellency to show a lead. Not that China as readily follows. It would be an unspeakable boon to China if the great viceroy could have a free hand for ten years. We write thus not because we might expect any liberal outburst of favours for Englishmen.

The viceroy is first and last a Chinaman. His watchword is "China and her treasures and commerce for the Chinese." He is rightly most loyal to his own country. When he makes a concession to a foreign nation which seems to confer any advantage to Europeans, he does so because the advance will result in a tenfold advantage to his own country. He never seeks popularity, and probably never tried to trim his sails to suit a popular wind; neither is he afraid of opposition. If he had been a timid or fearful man we should never have heard of him. It is only fair to suppose that his excellency's close acquaintance and co-operation with our lamented brave and good Gordon, 30 years ago, has considerably helped to make him what he really is, a soldier-statesman, fighting against the huge and obstinate anti-foreign party so long dominant in China. The viceroy is eminently practical—he possesses keen practical foresight and insight—so that, with patience and tact (of which he is a master), his doctrinnaire opponents are, sooner or later, defeated.

He is known to be greatly in favour of railways for China, but the difficulties of overcoming the enemies of progress are greater than the financial, engineering, and other problems that will have to be solved. The recent controversy amongst Chinese magnates on this great railway question illustrates the power of the viceroy and his skill as a master of diplomacy. When Viceroy Tsang Chi-tung opposed Li's railway to connect Peking with Tientsin, Tsang, who is opposed to all railways, skilfully hindered Li's scheme by suggesting an impracticable one—a line from Peking to Hankow, extending over 700 miles, to be made by Chinese labour, and to be carried out with Chinese capital and constructed with Chinese material. When this counter plan was sent to Li from the throne for his opinion, instead of showing how difficult such a work would be, he consents to the counter plan, but submits that his Excellency Tsang be transferred from Canton to Hankow to carry out his own scheme! Tsang most unwillingly has been transferred, and so railways are waiting for the next move on the board.

Just a year ago Mr. Jones, of the Peace Society, had an interview with his excellency the viceroy, who expressed warm approval of the objects of the association, asked many questions, and suggested that it would be a good thing if the society could convert some of the Great Powers—Russia, for example—to their views!

The viceroy is a great friend and help of the progress of the Western knowledge among the scholars of China. He is in his sixty-eighth year, and we gladly quote the following from the *Sheh Pao*: "Though on the verge of man's allotted years, his excellency still retains a high degree of mental and bodily vigour, and bids fair to pilot the ship of state for another decade."

The same paper (*Chinese Times*) says: "The amount of work the viceroy gets through each day in a very rapid, systematic, and thorough way too, is very surprising, but does not seem to overtax him. The duties of a Chinese magnate in office are excessively multifarious, and comprise momentous references from the Imperial Government and detail of a most trivial kind, and no European minister has such a range of great and small questions put before him endlessly day by day."

ON THE OPENING OF THE YANGTSE-KIANG RIVER TO NAVIGATION.

THE Chefoo Convention of 1876, entered into between Sir Thomas Wade, on behalf of the British Government, and Li Hung-Chang, Viceroy of Chili, on behalf of the Chinese, stipulated for the opening of certain new ports on the coast of China, and on the Yangtse river, as a partial compensation for the murder of Margary in the previous year, while engaged upon an expedition designed to open up a new trade route through Burmah to Western China. One of the clauses of the convention stipulated for the immediate opening of Ichang, a port situated 1,000 miles up the Yangtse river, and at the foot of the rapids, as well as for the conditional opening of Chung-King, a port situated nearly 500 miles higher up, the commercial metropolis of Western China itself. The condition precedent of the opening of Chung-King was the proved navigability of the "rapid" section of the river. The clause in which this agreement was come to was expressed negatively—"Chung-King shall not be opened until steamers have succeeded in ascending the river."

This clause remained a dead letter for ten years, when Mr. Archibald Little, a merchant of Ichang, applied for leave to attempt the navigation. The reasonableness of this request was admitted by the Pekin Government, and permission promised. Mr. Little went to London, and there proceeded to form a company to take advantage of the convention by building a steamer to run to Chung-King, and so open the port. A special steamer, a stern-wheeler, was constructed on the Clyde, shipped to Shanghai in pieces, there re-erected, and in February 1888, was taken by Mr. Little to Ichang, at which point it had been arranged that a "permit" to go on to Chung-King should be handed him by the local authorities.

But the local authorities, in the person of the Viceroy of Szechuen, the province of which Chung-King is the commercial capital, had determined that no steamer should invade his jurisdiction, and succeeded in stopping the Kuling, as Mr. Little's steamer was called, at Ichang. Nearly two years were spent in negotiations between our Foreign Office, the Pekin authorities, and the local officials, which, owing largely to the want of determination on the part of the British minister in China, Sir John Walshaw, unfortunately proved abortive. Ultimately, in December 1889, the Chinese, by the intermediary of Sir Robert Hart, the Inspector-General of the Chinese customs, entered into an agreement with the Upper Yangtse Steam Navigation Company, the owners of the steamer, to purchase the Kuling, and so compensate the shareholders for the unjustifiable delay which was fast ruining them. The small capital of the company was exhausted, the money they had succeeded in raising upon debentures was all spent, and Mr. Little's company was reluctantly compelled to submit to *vis* major and temporarily to abandon their scheme. Meanwhile the Chinese had submitted a counter-proposition to our Government, viz., to open the port of Chung-King to British trade and residence on the same conditions as those prevailing at the other "treaty" ports, with the stipulation that the right to run steamers there should be temporarily waived.

Negotiations upon these points have been going on ever since the Kuling was sold, which have at last resulted in the opening of Chung-King. It appears that British steamers will not have a right to run to the port until Chinese steamers ply there. We shall look with anxiety to learn when and under what conditions the

Chinese will run *their* steamers there. In the meanwhile it is satisfactory to know that the clause in the Chefoo Convention in regard to the opening of Chung-King to foreign trade has not been allowed to remain a dead letter any longer, and that, thanks to the exertions of Mr. Little and his company, a fresh extension of the area open to British commerce in the far East has been achieved. Upon the possibilities thus afforded and the benefits to be obtained by this latest advance we can as yet only speculate.

NOTE TO PAPER.

In my opinion the opening of Chung King to foreign trade is the most important step that has been made in China for many years, and it ought to be of immense benefit to this country, both in increasing trade in cotton goods and also in developing supplies of raw silk from the great West of China silk district. When foreigners are allowed to open silk filatures in Szechuen, and the Chinese imitate their methods, there will be an enormous field for the silk trade supply of raw material. This is only one of the many advantages that the opening up of commerce and the residence of Europeans is likely to bring about, and it is beyond and in addition to the advantages derived from the abolition of inland taxation at the numerous barriers and local custom houses between Ichang and Chung-King, which at present increase the cost of Manchester goods to the residents of Western China. For these benefits Lancashire has to thank Mr. Little and the Chamber of Commerce and the Manchester Geographical Society.

A. A. K.

Mount Ruwenzori.—Colonel Sir W. F. Butler has addressed a letter to us, in which he points out that the honour of the discovery or re-discovery of Ruwenzori, the chief peak of the "Mountains of the Moon," belongs to Mason Bey, who obtained a distant view of it when making a reconnaissance of Albert Nyanza by order of General Gordon in 1877. Mason Bey's report is published in the "Proceedings" of our Society, vol. xxii. (old series), p. 225, and contains the following brief allusion (p. 227) to the mountain seen from the deck of his little steamer when at the south-eastern end of the lake: "On both sides of the lake the mountains diminish in altitude; and to the southward, at the foot of the lake and between the two ranges, was a large isolated mountain." The distance of Ruwenzori from Mason Bey's position would be about 40 miles. It is to be remarked that Mason Bey, in his letter to us on the river at the southern end of Albert Nyanza ("Proceedings R.G.S.," 1890, p. 40), makes no allusion to his having sighted the famous mountain from that point. *Proceedings of the Royal Geographical Society.*

The Trade of Marocco.—Sir J. H. Drummond-Hay believes that Marocco might export a large quantity of agricultural produce under a just and prudent Government. The soil is very fertile, particularly in the southern provinces, and produces wheat, barley, maize, and other grains, cotton, oil, fruits, cattle, &c. The people are strong and intelligent, and the climate more temperate than in southern Spain. But the inhabitants do not care to waste their labour in producing more than suffices for their maintenance, when any surplus there may be is taken from them by the tax collectors, and any show of wealth attracts the unpleasant attentions of the Government officials. The prohibitions and duties on exports also exercise a prejudicial influence on agriculture, as was proved in the case of maize. Sir John Drummond-Hay succeeded in getting the prohibition on the exportation of that grain removed by the Convention of 1856. The first year one vessel only was laden with maize, but in subsequent years one hundred vessels were annually laden with it, and a large quantity of fresh land was brought under cultivation. Yet, in spite of the fanaticism of the Sultan's advisers and the unsettled state of the country, trade does to some extent increase. In the years 1875-1885 the value of the imports averaged £1,033,918 annually, of which about three-fourths represented British goods. The imports at Tangier in 1887 amounted to £748,000, about £62,000 more than in the previous year.—*Chamber of Commerce Journal,* 5th December, 1889.

THE UPPER AMAZONIAN REGIONS AS A FIELD FOR ENGLISH ENTERPRISE.

BY AN ENGLISH RESIDENT.

[Communicated by Chevalier GUILLAUME, Southampton, Consul for Peru.]

IN reply to many inquiries from my countrymen at home, as to the suitability of these regions for commercial enterprise and emigration, I take this early opportunity of giving a few facts respecting this magnificent country. Situated at the base of the Andes mountains it stretches far away eastwards to the Brazilian frontier, and is one of the healthiest and most picturesque parts of the South American continent. No one who has not seen the "King of Rivers" can form an idea of its grandeur or of the immense vegetable and mineral wealth with which nature has endowed this wonderful zone. The last stage of steamboat navigation ends at Yurimaguas, a port on the Huallaga. All traffic beyond this place is carried on by means of canoes. This town and Iquitos are the two principal centres of trade, the latter being by far the most important. Iquitos is the chief Peruvian naval port on the Amazon. It is situated upon a slight eminence, in a bend of the river, and covers a large space of ground. The houses and huts are built with regard to ventilation and convenience. It is the sanatorium of the Marañon, or Upper Amazon, and is healthier by far than many of our English watering places. The temperature throughout the year may be averaged at 82° Fahr., and it seldom varies. Twenty years ago it had only 1,000 inhabitants, but now it contains 8,000, five-sixths of whom are civilised half-caste Indians, the remainder being South Americans and Europeans. Most European commodities are obtainable at moderate prices. An active trade is carried on. The imported goods are exchanged for indiarubber, which is the principal product of these regions. Preserved meats are the principal food, owing to the scarcity of fresh animal meat. Anyone with a knowledge of rearing farming stock would soon realise a large fortune in supplying the town with fresh meat. Cattle are easily reared, and sheep, goats, pigs, and poultry. The latter include a great variety of the wild Gallinaceæ, which stock the Amazonian forests. Llamas and four-horned sheep are reared in the vicinity of Moyobamba.

Turtles abound in all the rivers. Fishing is excellent. The woods are overrun with the porcine tribe—also with deer; and there is an abundance of feathered game. Those who have tasted peccari ham, cooked on embers in a roll of clay, as the Indians prepare it, can well realise Humboldt's innate yearning for the savoury viand—the only thing that, in all his wanderings in the New World, he regretted leaving behind him.

The forests abound in all kinds of rich cabinet woods and medicinal plants, amongst which may be mentioned the indiarubber tree, at present the most valuable; the aguana, or mahogany; the tortoise-shell wood; the cocobolo, a most valuable wood for fine cabinet work; the huacapa, a durable wood equal to lignum vitæ; and many others.

FRUITS.—The indigo plant, pistachio root, sapote, mango, pine-apple, cocoanut, and that delicious fruit the guineo, the guava, papaw, custard-apple, guamtana, alligator pear, caymito, and the marañon or cachou. From the latter an exquisite blood-purifying wine is produced. The vanilla and the vegetable ivory are met with in abundance. The natives cultivate the sugar-cane, cocoa, coffee, Indian corn, mandioca, and kidney bean, but only enough for their own use. Very fragrant tobacco is also grown near Iquitos. The soil is well adapted for growing cotton and rice. Wherever a clearing is effected the finest grass will grow equal to the best Devonshire pastures. The main stream is perfectly healthy, as also the Ucayali, Huallaga, Chambira, Pastaza, and other rivers. Fevers are only prevalent on those rivers with low banks, where there are lagoons, such as the Yavary, Napo, and Tigri.

There yet remains one article of paramount importance, which is destined to be the source of wealth to companies and private individuals, and that is "gold." All the rivers which descend from the Andes bring down large quantities of gold. A mining engineer sometime since assured me that there were, to use his own expression, "tons of gold" on the surface and in the strata about Borja, and it needs but a moderate capital to work the mines there with success. Personally, I have handled several surface nuggets as large as hedge-sparrows' eggs. This is a splendid opportunity for any mining company. Gold is also obtained a short distance up the Napo.

The gold-washings on the Alto Marañon are just now paralysed. The reason for this is that the yield has not been sufficient to defray the expenses occasioned by their method of working by manual labour. Were a company formed, and machinery employed, I am confident that the returns would amply repay the venture. The greatest depth of water is probably six feet. *En passant*, I may bring to your notice the fact that very rich gold-bearing quartz has recently been unearthed in the Alto Ucayali, and I am informed that persons are coming over from the Pacific to work these mines.

The foregoing is only a brief outline of the various products so freely scattered by Nature's lavish hand upon this much-favoured region. The country, though so little known, admits of much logical speculation that would be out of place in such a letter as the present, and not until after years of pioneer labour, and when the benign influence of Western civilisation has told upon the "noble savage," whose home it is, can full justice be done to this really wonderful zone. Let us turn our thoughts to the *modus operandi* of the intending emigrant—but I would not advise anyone to come out alone unless backed up by a fair capital, both in respect to agriculture and gold mining. It would be far and away the best plan to form companies. He would avail himself either of Alfred Booth's or the Red Cross line of steamers, both of which ply between Liverpool and Para or Manaos, it being preferable to book through to this latter inter-Amazonian port. From thence he would go up river to Iquitos by one of the Amazon Steam Navigation Company's boats. Once arrived at Iquitos our pioneer would seek an interview with the prefect of the department, who has received full instructions from Lima regarding the anticipated emigration, and he would immediately place the applicant in the right way of commencing. The maximum grant of land at his disposal is 120 hectares, equal to 296½ acres English measurement, which is ample, and in many cases more than any agriculturist would care to look after. The wood felled during the clearing would command an immediate return, and only ten weeks would elapse from the sowing of the corn and beans to the first harvest. Plantains yield fruit after ten months from the time of their being planted. One word regarding native labour. It is utterly out of the question for any emigrant to count upon native help. He must rely entirely upon his own strength in respect to everything. He alone must clear the ground, sow the land, and reap the harvest, for the few peons met with hereabouts are not sufficient for the requirements of the place. Moreover they are a lazy lot, and owing to the demand, they earn at the rate of 4s. per day.

It appears strange that no steps have yet been taken by Europeans towards colonizing this beautiful valley; but when one reflects on the ignorance that exists regarding it, the fact calls for less surprise. Many an enterprise started under less favourable auspices has been crowned with success. I do not hesitate for one moment in recommending intending emigrants from the "Old Country" to try Loreto in preference to any of our colonies. The old travellers went not far astray in search of El Dorado. They passed and re-passed, crossed and re-crossed the cherished ground, yet failed to recognise it.

Iquitos, August 23rd, 1889.

Caucasian Photographs.—It is not perhaps generally known in England that the late Quintino Sella, the Italian statesman, was a keen climber and President of the Italian Alpine Club. (See in "Alpine Journal," vol. xi. pp. 447-9, an obituary notice written by his old friend the late Mr. John Ball.) This mountain enthusiasm has descended to his two nephews, like himself, natives of Biella, at the foot of Monte Rosa. Last summer the Signori Sella visited the Caucasus, from which Vittorio Sella, who is an admirable photographer, has brought back over a hundred photographs, many of them superb examples of the photographic art as well as of high topographic interest. First in importance, to the geographer at any rate, are the three panoramic views taken respectively from a height of 16,400 feet on the eastern peak of Elbruz, from a point in the main chain south of that mountain and near the Betsho Pass (12,400 feet), and from the summit of the Leila (13,400 feet). In the view from Elbruz the picturesque effect is greatly heightened by a shining floor of clouds, the roof of the lower world, which cover the valley of the Baksan and the distant steppe. The wavelike forms of their upper surface are curiously distinct. Above the clouds, which lie at about 9,000 feet, the main chain, with its great spurs, its lateral ranges, and its glacier basins, is spread out in the clearest detail as far as the central group. On the farther side, seen over it, lies the hollow of Suanetia. The photograph has the precision and conveys much of the information of a relief model on a great scale, such as those shown by officers of the Swiss Federal Staff in the recent Paris Exhibition. Those who have never seen a great mountain view may look on this presentment and form some accurate idea of the reality; those who have said that there is nothing to be seen or learnt on great peaks may look at it—and repent. The second panorama is taken from a point in the chain looking eastwards. Here the twin crests of Ushba dominate a mass of wild crags and glaciers. The view from the Leila is less successful in reproducing the splendour of nature, because in the original colour plays so great a part. The sparkling white of the thousand towers of the Suanetian villages, the gold of the barley fields, the varied greens of the forests, have to be filled in from memory by the few or imagined by the many. The physical geographer may possibly be misled by the comparatively few glaciers visible into underestimating the number and extent of those on the southern side of the chain. From Adish westwards the icefields are masked by a subsidiary range of schists, which here runs closely parallel to the granite crest. Some of Signor Sella's photographs have a special personal interest, as representing the Ulluauz glen and the side of Dychtau, first attempted by Donkin and Fox. Others illustrate the scenery of both sides of the range. They are by no means limited to a succession of snow-peaks, rocks, and glaciers. Among them will be found some beautiful forest scenes in the Nakra valley, a charming glade of flowers (No. 615), together with some groups of natives (dance at Bezingi, No. 553), Suanetian shepherds (No. 654), Suanetian women (No. 644), an old Suanetian church with traces of a fresco on its walls at Mestia (No. 649), and photographs of M. Delbisheff's collection of Ossete antiquities (No. 662), a few specimens of which will be shown on the 10th February at the Royal Geographical Society's meeting. The whole collection, together with the views taken this year by Mr. Hermann Woolley, and enlargements of a few of Mr. W. F. Donkin's last views, will be shown in the Society's Map Room in the first half of February. Signor V. Sella has conferred a great boon on all lovers of mountain scenery by the production of this magnificent series, and has done much to correct and enlarge our knowledge of the chain illustrated. Messrs. Spooner, of the Strand, have at all times catalogues both of the late Mr. Donkin's and Signor Sella's Caucasian views. Applications for copies must be made through them.—D.W.F., *Proceedings of the Royal Geographical Society.*

CORRESPONDENCE.

NOTES ON SULPHUR SPRINGS, NORTH END OF FORMOSA.

(See Illustration.)

By MR. JOSEPH RIPPON.

Among the mountains at the North End of Formosa frequent indication of the existence of sulphurous springs are given, to the sense of smell by fumes, and to vision by jets of steam rising from the sides of the hills to a height of thirty or forty feet in the air. On a near approach the indication is further impressed by a continual hissing and bubbling, and the odour from the heated water below is almost suffocating. There are numerous springs in this part of the island, and sulphur without end might be procured, and the value of this industry enhanced considerably. The fumes (shown by the white patch) in the illustration are visible from the plains below. At the point shown this is the only spring, and there is very little sulphur collected here; but at another depression along the Kelung Creek there are innumerable fissures and ejections from a crater of quite a quarter of a mile in circumference. Throughout this range of mountains, as far as Kelung, sulphur mines abound, and their existence is again made more plain by reason of the bleached appearance of the land within miles of their vicinity. Streams are found, deep, clear, and the water hot and fully impregnated with sulphur, which would be very valuable for curative purposes.

The peculiarity of a depression of this kind is striking. Innumerable springs abound in close proximity, some heated to boiling point, others a few feet apart quite cold. Again there are shafts sunk ten or fifteen feet deep quite dry and clear of water. These pits, when left for a time, do *not* become wells. The excavation is done in lava, and the solid sulphur exists in irregular seams of three or four inches thick. As one walks over the depression, parts are quite solid and firm, a few feet away the ground is elastic and yielding, and it needs the greatest care to keep clear of being drawn into a boiling cauldron. Bubbling and mysterious noises come from all parts of the ground, and the the clouds of suffocating steam blown by the wind calls for a great deal of presence of mind. A very short distance away from the crater are springs and streams of pure water, and the surrounding vegetation is prolific and beautiful. The sides of the mountains are covered with the tea plant and pineapples. The Formosans at work in the sulphur mines are employed by the Chinese Government. They lead the life of never-ending toil, and an existence at this weird scarred scene, miles away from the villagers in the plains, causes them to become a distinct peculiar race to themselves. They are simple, very kind and willing to pilot the "barbarian," and take as much delight as himself in the examination of the rude methods of separating—by boiling—of the foreign substances and depositing of the pure natural mineral.

Boiling Spring, North Formosa. From a Photograph supplied by Mr. Joseph Rippon.

THE ISLAND OF SAN THOMÉ AND THE WEST COAST OF AFRICA.

[Notes from Letter from Mr. J. RIPPON.]

SAN THOMÉ was discovered about the year 1470 by the Portuguese. Fifteen years afterwards it was colonised, and its prosperity was great until in 1574 the bush negroes attacked the whites, and kept up a war for nearly a century. The discovery of Brazil damaged San Thomé, and since then it has never prospered. The fact, however, of its once having enjoyed prosperity, is a reason for its prospering once again. San Thomé is 25 miles long and 18 miles broad. As we entered the bay of Anna de Chaves—the high hill, or rather mountain, in the background, the city of San Thomé, with its variously-coloured buildings spread from the fort at the extreme south, and on low-lying land to the large block of buildings on the high ground at the north point—the prospect was pleasing and very pretty, though not to be compared to Fernando Po. We landed during the afternoon, and after having passed through the Customs-house—the principal building here, as in all other Portuguese possessions—we walked down the Rua d'Algeria, and were struck at the number of ruined and deserted dwellings. The road, however, was a good one, and as we passed the native wooden shanties we noticed their clumsy style of construction. After about five minutes' walk we came to a fine stone building, with a bell tower, and expected to get the chance of seeing something of a chapel, but as we neared it we found that it was roofless and in ruins. We retraced our footsteps, and made for the Cathedral, at the other end of the town. Its appearance was very imposing from the ship. We passed the Grand Square, where a bandstand reminded us of pleasant times at home, and after crossing a bridge came upon the grand Cathedral, also roofless and windowless. We were given to understand that there were other churches to be visited, but we had no time, and had seen enough. Dotted about the mountains, in among the trees, are many farmhouses and coffee and cocoa plantations; and I suppose it is here that the domestic slaves are at work. I noticed Levi and Bastos came off in a boat, rowed by boys from Chinchonyo, some of Theaba da Costa's slaves, perhaps, let out on hire, but, of course, I cannot say. We left San Thomé for Cape Lopez—an English trading station under the French Government—on Saturday evening, and on Sunday, after having landed, proceeded to Fernand Vaz, an English trading station at the mouth of the Ogowai, also under the French. On Monday we called at Manya, and here Messrs. Hatton and Cookson's assistant came off to see the doctor. He had been out visiting a friend of his three weeks before, and after wishing him good-night was about to proceed down the steps when they gave way, and down he came some fifteen feet, luckily, only dislocating his shoulder, or collar bone. There being no doctor for 100 or 150 miles around, he could not either go and see one or send for one, so he had borne his trial as best he could until we came along. The doctor did his best for him, but he will always be a little deformed. Mr. Myler absented himself from the table, not being well. As I had a slight touch of fever I told him the symptoms, and asked him if he felt anything like them. He said "No." I did not quite believe him, as he looked feverish. He said he was merely tired.

Tuesday.—We worked Settalama.

Wednesday.—Mayumba, both of these English trading stations are now under the French Government.

Thursday.—Still seedy, but felt ever so much better after meeting dear old Dr. Lucan, whose jolly face and strong dose of quinine soon put me nearly to rights. Myler seemed better, and came to table. Some of the missionaries from Landana and Dr. Lucan had come to Loango to welcome Pere Cairie, now Bishop of the Congo, whom they expected to arrive by us.' Passing Black Point, where we only stay a short while, we arrived at Landana Friday afternoon. From Loango downwards, the natives welcomed me back amongst them, but they shouted and sang the news about here quite heartily. I went ashore and dined with Dr. and Mrs. Lucan, and was delighted to see George and baby looking so well. Poor old Pichot has been very much knocked about during my absence, having suffered from many *fatal* diseases, the last one leaving him for some time paralyzed; he is much better though, and we were delighted to see one another again.

We steamed into Cabunda Saturday afternoon, and Guest was the first old friend to greet me. We had a lot to talk about, as you may imagine. I went ashore to see the rest of my old comrades, and found all well except the agent, Mr. McCreadie, who had been and was very seedy. I sat with him until dinner, when he retired, and the evening we passed chatting and playing billiards. The public works here have not progressed rapidly during my absence, but I believe that they are awaiting the arrival of the Governor-General. I am glad to learn that the Portuguese Government have decided not to send criminals here, nor to employ criminal labour. While I was on shore the doctor and captain tried to persuade Mr. Myler, who has the fever after all, to take medicine. He will not do so, however.

Sunday.—We are now on our way to Banana. Mr. Myler is not expected to live, and we cannot do anything to help him, as he positively refuses to touch either nourishment or medicines.

Since writing above have been very busy. As a sad example of bigotry and a martyr to wrong principles, poor Mr. Myler died two days after being landed. He refused medicines and food of any sort—in fact, committed suicide, I should be tempted to say, were it not that I felt so indignant against those who promulgate those vicious doctrines among the *ignorant*, among whom we must include poor Myler.

Discovery of Petroleum in Saghalien.—In the summer of 1887 Herr Lindenbaum found a petroleum lake on a narrow tongue of land in the north of Saghalien. It is about 22 miles north-east of a village named Pomor, and at about 54° N. lat. A little south of Pomor lies Baikal Bay, a good harbour, which has a depth of eight feet at low tide, and could therefore be entered by small vessels. There would be no difficulty in making a good road from this place to the petroleum lake. There is also another spot, 125 miles south of the former, where petroleum is said to occur.—*Globus*, Bd. 56, No. xvii.—*The Scottish Geographical Magazine.*

An Expedition to the Upper Amazons.—An expedition has been despatched by the Peruvian Government to the Javary river, on the borders of Peru and Bolivia. The primary object of the expedition is a military one, being the chastisement of the Indians for the murder of white traders, but as not less than five scientific men accompany the party, some important results with regard to the topography and ethnography of the region may be expected. Among the savants is M. Richard Payer, who on returning to South America after a hurried visit to Europe was invited to join the expedition.—*Proceedings of the Royal Geographical Society.*

PROCEEDINGS OF THE SOCIETY

FROM JANUARY 1ST TO MARCH 31ST, 1890.

HUNDRED AND SIXTEENTH MEETING

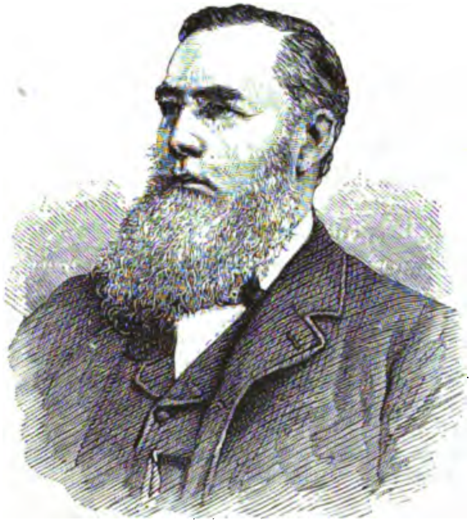
Of the Society, held in the Memorial Hall, on Wednesday, January 15, 1890, at 7-30 p.m.; Mr. R. BARKER in the chair.

Mr. H. J. MACKINDER, M.A., F.R.G.S., Reader to the University of Oxford in Geography, addressed the members "On the Necessity of Thorough Teaching in General Geography as a Preliminary to the Teaching of Commercial Geography" (see page 1).

Mr. J. J. CARDWELL also addressed the members on the subject.

The Chevalier R. FROEHLICH moved and Mr. C. H. STOTT seconded a most cordial vote of thanks to Mr. Mackinder for his eloquent and impressive address, which was carried unanimously.

Mr. MACKINDER responded.



Mr. Daniel Adamson, J.P., a Member of the Manchester Geographical Society.
Born 1818, at Shildon. Died 1890.

The death of one of the earliest and best friends of the Society, Field Marshal Lord Napier of Magdala, and of one of our most distinguished members, Mr. Daniel Adamson, having been announced, it was resolved that the Secretary be requested to tender to the families of Lord Napier of Magdala and of Mr. Adamson the heartfelt sympathy of the Society.

A vote of thanks to the Chairman closed the meeting.

HUNDRED AND SEVENTEENTH MEETING

Of the Society, at the Cheetham Town Hall, Tuesday, January 21st, 1890, at 6-30 p.m.

The members residing in Cheetham, North Manchester, and Broughton formed a committee, with Mr. S. Ogden, J.P., as chairman, and invited the other members of the Society to an "At Home." Mr. Ogden, Councillor Sherratt, Mr. M. Stirrup, F.G.S., Dr. Pankhurst, and the committee received the members, upwards of 300 being present.

Mr. J. GIBBONS SANKEY, B.A., addressed the members on the "Architecture of some of the Grecian Remains," and noted their geographical distribution.

The address was illustrated by a series of slides taken by Mr. G. A. Pingstone, F.C.S., on his recent visit to Greece.

R. M. PANKHURST, Esq., LL.D., moved a very hearty vote of thanks to the committee, to the chairman, to Mr. Sankey, to Mr. Pingstone, to the ladies, to the vocalists and musicians, and to all those who had enabled the Society to have so very agreeable a meeting.

The motion was seconded by the Rev. A. REDMAN, vicar of Heywood, and was carried.

Light refreshments were provided in the supper-room, and the following ladies and gentlemen provided music, &c., during the evening: Mrs. Done, Miss Methven, Miss C. Walker, Miss E. Webster, Messrs. Councillor Sherratt, C. W. Grindley, R. C. Phillips, and G. V. Webster. The following letters were read:—

"Messrs. D. Adamson and Co.,
"Dukinfield, 20th Jan., 1890.

"Dear Sir,—Mrs. Adamson desires to thank you very much for your kind letter of the 15th inst., and will be glad if you will convey to the members of your Society her sincerest thanks for the very kind resolution of sympathy passed to her in the great loss she has sustained in the loss of Mr. Daniel Adamson. The very kind words contained in the resolution she feels deeply. May we also add our thanks to hers.—We are, yours truly, (Signed) "DANIEL ADAMSON AND CO.

"Eli Sowerbutts, Esq., F.R.G.S."

The following telegram, which had been sent to Zanzibar, and Mr. H. M. Stanley's reply, were read:—

"To Stanley. Consul Euan Smith, Zanzibar.

"Manchester Geographical Society sends cordial greeting to yourself and brave companions, trusting your health may be spared.

"GREENWOOD, STEINTHAL, AND SOWERBUTTS."

The following is the reply:—

"To Geographical Society, Manchester.

"We all thank you most heartily.—STANLEY."

HUNDRED AND EIGHTEENTH MEETING

Of the Society, held in the Library, January 24, 1890, at 7-30 p.m., Mr. H. YULE OLDHAM in the chair.

A long and interesting discussion on the journey of Mr. Stanley took place. The telegram from Mr. Stanley, read at the last meeting, was also referred to with great pleasure.

A short address was given by the SECRETARY "On the Comparative Social Comforts and Position of Working People in England, France, and Belgium."

A paper by Mr. BASIL THOMSON, on "Rossel, a Cannibal Island," was read (see page 7).

Votes of thanks closed the meeting.

HUNDRED AND NINETEENTH MEETING

Of the Society, held in the Memorial Hall, February 12, 1890, at 7-30 p.m., Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

Mr. MARK STIRRUP, F.G.S., addressed the members on "Unknown France: the Hydrology of the Causses of Languedoc" (see p. 12). The address was illustrated by a large diagram map prepared by the Victorians, a physical map of France, specially obtained, and a beautiful collection of transparencies from M. Martel, the celebrated opener-up and explorer of the district.

Mr. S. OGDEN, J.P., moved, and Mr. O'Connor seconded, a hearty vote of thanks to Mr. Stirrup, and expressed a hope that we might have a repetition of the address.

Mr. STIRRUP responded, and proposed a vote of thanks to the Chairman, which was carried.

HUNDRED AND TWENTIETH MEETING

Of the Society was held by invitation at the Schiller-Anstalt, Nelson Street, Chorlton-on-Medlock, on Wednesday, February 26th, 1890, at 8 p.m., Mr. F. ZIMMERN in the chair.

The walls were decorated with a large collection of maps, charts, diagrams, and views illustrating the Congo, East Africa, and the people of Africa, and about 120 transparencies were exhibited.

Mr. R. C. PHILLIPS described the Congo to Yambuya, the SECRETARY described the Route from Yambuya to Msalala, and the Rev. T. WAKEFIELD described the East Country from Msalala to Bagamoyo. Some questions were asked and were replied to by the speakers.

Dr. WARD moved a very hearty vote of thanks to the speakers, to the committee of the club, and to the chairman, which was carried unanimously.

Mr. WAKEFIELD responded on behalf of all, and the meeting closed.

HUNDRED AND TWENTY-FIRST MEETING

Of the Society, held in the Lower Mosley Street School, on Friday, February 20th, 1890, at 7-30 p.m. Mr. M. T. PHILLIPS was voted into the chair.

The meeting was an experimental one, and was a very gratifying success. About 500 children were present. Nearly 150 lantern views, geographically arranged, were exhibited, with short, pithy, humorous descriptions by several members, Miss E. Webster adding to the interest with music.

Votes of thanks to all who had taken part were heartily given, and hope was expressed that in future sessions meetings of the kind might be held in other parts of the city.

HUNDRED AND TWENTY-SECOND MEETING

Of the Society, held in the Memorial Hall, March 5th, 1890, at 8 p.m., Dr. A. W. **Ward**, Vice-Chancellor of the Victoria University, in the chair, and on his retirement Professor W. **Boyd Dawkins**.

A large collection of photographs from Senor Sella, Messrs. D. W. Freshfield, H. W. Holder, M.A., and Hermann Woolley, some large maps, and a large number of lantern views were exhibited.

The **Chairman** said that it was his melancholy duty to mention the death of some of the friends and founders of the Society. He referred to Sir E. Baines (of Leeds), Mr. R. N. Philips, Mr. J. C. Johnson, and Mr. J. F. Hutton, one of our vice-presidents.

The Rev. S. A. **Steinthal** moved, and Professor **Boyd Dawkins** seconded, resolutions of condolence, which were adopted and ordered to be forwarded by the Secretary.

Mr. **Douglas W. Freshfield**, F.R.G.S., hon. sec. of the Royal Geographical Society, addressed the members "On Mountaineering and Geography. The Caucasus: its Place in History. Recent Explorations" (see page 17). The address excited unusual interest, and a large number of questions was asked.

The questions having been replied to, Mr. H. W. **Holder** moved and Mr. **Hermann Woolley** seconded a hearty vote of thanks to Mr. Freshfield, and gave some of their own experiences of mountain travel in the Caucasus.

Professor W. **Boyd Dawkins** moved, and Mr. **Ogden** seconded, a resolution that Mr. Freshfield should be elected an honorary member of the Society, which was carried by acclamation.

Mr. **Freshfield** responded, and the meeting closed after the members had examined the beautiful photographs.

HUNDRED AND TWENTY-THIRD MEETING

Of the Society, held in the Library, Tuesday, March 18, 1890, at 7-30 p.m., Mr. R. **O'Connor** in the chair.

Several letters having been read, the election of the following members was announced:—

Ordinary: Messrs. Thomas Addyman, Edward Ball, Hermann Bass, Hans Beyerlein, William Bradley, W. Clemson, Robert Fielding, William Garside, T. W. Hampson, John Heyman, H. W. Holder, M.A., Edward Hopkinson, D.Sc., Rev. F. J. Horsefield, George Howe, John Johnson, W. W. Kay, James McLoughlin, Councillor W. H. Malkin, F. Mappes, Derbyshire Mayall, F. Mehl, J. B. Midgeley, Sinclair Pearn, C. Roskill, Edward Shippey, J. J. Tinkler, Richard Wade, John Wainwright, R. Wallwork, and Joseph Watson.

Associates: Messrs. A. W. Bowker, Samuel Dyson, Moritz Frank, Rudolph Gemuseus, W. D. Pitcairn, F.R.G.S., J. Howard Reed, Joseph Slater, and Rev. E. E. Stuttard.

Honorary: Messrs. J. G. Greenwood, LL.D., and Douglas W. Freshfield, F.R.G.S.

The additions to the library having been announced, the following papers were read: "Exploration of the Owen-Stanley Range, New Guinea," by Sir W. **MacGregor**, K.C.M.G.; "Zambesia," by F. C. **Selous**; "Suppression of the Slave Trade," by Captain F. D. **Lugard**, D.S.O.; "The Karun River"; "The New and Beautiful Map of Madagascar," by MM. **Laillet** and **Suberbie**; a paper on "Local Geography," by Councillor J. **Hardy**.

After a short discussion and votes of thanks the meeting closed.

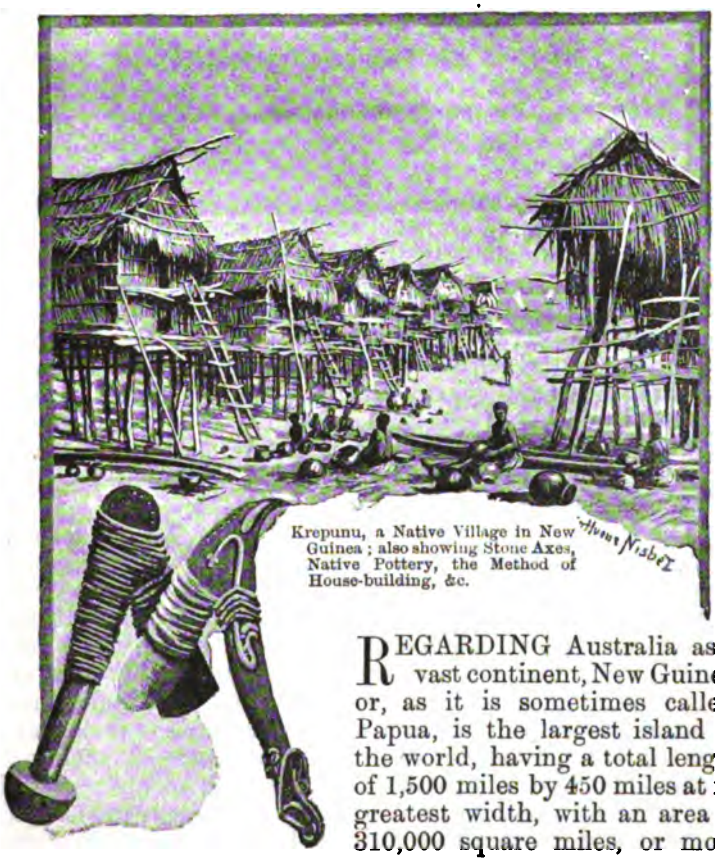
THE JOURNAL
OF THE
MANCHESTER GEOGRAPHICAL SOCIETY.

BRITISH NEW GUINEA: ITS GEOGRAPHY AND THE MANNERS AND CUSTOMS OF THE NATIVES.*

(See Map, Vol. II., page 312.)

BY W. D. PITCAIRN, F.R.G.S.

[Addressed to the Members, in the Memorial Hall, Wednesday, April 2nd, 1890.]



Krepunu, a Native Village in New Guinea; also showing Stone Axes, Native Pottery, the Method of House-building, &c.

REGARDING Australia as a vast continent, New Guinea, or, as it is sometimes called, Papua, is the largest island in the world, having a total length of 1,500 miles by 450 miles at its greatest width, with an area of 310,000 square miles, or more

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*** The illustrations to this paper are reprinted from "Among the Cannibals," by Rev. Dr. Macfarlane, by his permission and The London Missionary Society.**

VOL. VI.—NOS. 4-6—APRIL TO JUNE, 1890.

than twice the size of the United Kingdom. Although New Guinea is in close proximity to Queensland, being only 300 to 400 miles distant from the port of Cooktown, until within the last few years little was known about it, and even at the present time our information is very scanty. It might well be called the "Dark Continent," as no white man has as yet crossed it. The coast for a considerable distance is fairly well known, but even that knowledge is far from complete. In the year 1873, sixteen years ago, Captain Moresby, in H.M.S. Basilisk, sailed round the islands and along part of the coast, naming numerous islands after the ship and her officers. He discovered the splendid harbour of Port Moresby, or Hanuabada, on the south coast, which is at the present time the headquarters of the London Missionary Society and of the Government. He also made a flying survey, which of necessity was far from correct, but proved of great service to future surveyors.

In the year 1883, Sir Thomas McIlwraith, then Premier of Queensland, on behalf of his Government, annexed the whole of New Guinea, thus hoping to exclude the Germans. He had previously urged the Home Government to do this, but they remained inactive.

Upon learning what had been done, the home authorities emphatically refused to sanction it, and on their own behalf established a protectorate over the territory extending from lat. 5 to 10½ south and long. 141 to 151 east, comprising 89,000 square miles, the Germans having occupied the territory to the north, containing 71,000 square miles, whilst the Dutch territory, which lies to the north-west, and was annexed by Holland in the sixteenth century, contains 150,000 square miles, an area equal to the German and British combined.

The proclamation took place on November 6th, 1884, at Port Moresby, where the British flag was hoisted and the British men-of-war saluted.

The formal declaration was read in the following terms:—

"To all to whom these presents shall come, greeting,—Whereas it has become essential, for the lives and properties of the native inhabitants of New Guinea, and for the purpose of preventing the occupation of portions of that country by persons whose proceedings, unsanctioned by any lawful authority, might tend to injustice, strife, and bloodshed, and who, under the pretence of legitimate trade and intercourse, might endanger the liberties and possess themselves of the lands of such native inhabitants, that a British protectorate should be established over a certain portion of such country and the islands adjacent thereto: and whereas Her Majesty, having taken into her gracious consideration the urgent necessity of her protection to such inhabitants, has directed me to proclaim such protection in a formal manner at this place. Now I, James Elphinstone

Erskine, captain in the Royal Navy and commodore of the Australian station, one of Her Majesty's naval aides-de-camp, do hereby, in the name of Her Most Gracious Majesty, declare and proclaim the establishment of such protectorate over such portions of the coast and the adjacent islands as are more particularly described in the schedule hereunto annexed: and I hereby proclaim and declare that no acquisition of land, whensoever or howsoever acquired, within the limits of the protectorate hereby established will be recognised by Her Majesty; and I do hereby command and enjoin all persons whom it may concern to take notice of this proclamation."

SCHEDULE.

"All that portion of the southern shores of New Guinea commencing from the boundary of that portion of the country claimed by the Government of the Netherlands on the 141st meridian of east longitude to East Cape, with all the islands adjacent thereto south of East Cape to Kosmann Island inclusive, together with the islands in the Goschen Straits. Given on board Her Majesty's ship Nelson, at the harbour of Port Moresby, on the 6th day of November, 1884."

Sir Peter Scratchley, a distinguished military officer, was appointed special commissioner. He chartered the steamer Governor Blackall, and with a large staff visited his new district, travelling along the coast for a considerable distance, and interviewing several of the leading chiefs. His term of office was, however, fated to be a short one, as in three months after his appointment, when off Mitre Rock, which is the extreme northern boundary, he contracted the dreaded malaria, immediately ordered the steamer to return to Queensland, and the day after leaving Cooktown died on board.

The Hon. John Douglas, resident magistrate of Thursday Island, was appointed his successor, and ruled quietly and unobtrusively for three years. The country, meanwhile, was not developed in any way. The expenses of the protectorate were considerable, when, as luck would have it, a man of the name of Whyte, who was engaged on a pearl-shelling boat in the Louisiade Archipelago—which is part and parcel of British New Guinea territory—informed Mr. Douglas that he had discovered an auriferous reef on Johannet Island, showing him specimens therefrom. This conversation took place in Cooktown, Queensland, in consequence of which Mr. Douglas purchased the Juanita, a cutter of seven to nine tons burthen, provisioning it for a three months' cruise.

Mr. Whyte found eight practical miners who were willing to go with him, although they were aware that he was not a miner. The adventurous party set sail at the end of May, 1888, made a quick passage, and arrived safely at Johannet Island about the 10th of June. Whyte was asked by the diggers to point out the golden reef that he had discovered. He showed them a buck reef, by which is meant a quartz reef not carrying gold, which had never carried gold and never would. In fact, there was no trace of gold on the whole island. The outraged feelings of the diggers may be imagined. The wonder is they did not kill him. Fortunately, however, there was a larger island, seven miles distant, namely, Sud-Est. They went there, and on the second day after landing discovered traces of gold. Their spirits rose at once. They diligently followed them up, and in less than three months obtained 150 ounces of gold, of the value of £550.

Mr. Douglas had stipulated that at the end of three months the boat was to be returned to the British New Guinea Government, which was accordingly done. I saw the prospecting party on their return from Sud-Est. They reported that they had worked the field out, and that it was very patchy.

This report speedily reached Cooktown, setting it on fire, everyone believing that there were millions of ounces of the precious metal awaiting their grasp. A party of twenty-six diggers left Cooktown on August 14, 1888, in the schooner Griffin, other sailing vessels following at short intervals.

This discovery caused the home Government to create British New Guinea a British possession, which was declared on the 6th September 1888, and an administrator, now Sir William Macgregor, was appointed. A high tariff was at once imposed upon all imports, which revenue came as a godsend to the impoverished state of the New Guinea funds. On the 1st of October, when I visited the field, there were four hundred men there. Some were doing well, others making good wages, whilst many were not making "tucker;" others, again, were laid up in their tents, sick with fever. The field only lasted twelve months, during which time dozens of diggers died from malaria; and although several thousands of ounces of gold were obtained from the islands, it cost a lot of money to get them. It was all alluvial digging, from 6in. to 2ft. wash, no reef carrying gold having been found.

Sud-Est is a large island, 40 miles in length by about 8 broad. The coast runs east and west. It has high land—the principal mountain, Mount Rattlesnake, which is on the south-east, is over 3,000 feet above the sea. There are hundreds of deep gullies running north and south, with bald hills covered with good grass separating them. The gullies are very steep and well wooded. The rivers and creeks run north and south, with gullies (mostly dry) meeting them at right angles. The greater part of the gold was found on the western side of the island. Strange to say, there was no indication of any leaders or reefs bearing gold, although occasionally nuggets weighing

4oz. have been obtained. In my opinion, Sud-Est is one of the healthiest spots in New Guinea.

The discovery of this field has nevertheless proved conclusively that gold in payable quantities exists in British New Guinea. It certainly was found 150 miles away from the mainland, but, from the formation of the islands, which extend from within a few miles of it in one unbroken line as far as Sud-Est, there being only very narrow straits separating them, it is not too much to say that at one time they formed part of that mainland, and therefore it is a fair hypothesis to argue that gold must exist there in payable quantities, and merely requires tracing. There have been one or two prospecting parties for that purpose, who were badly equipped, and naturally were unsuccessful. Notwithstanding this discouragement, I see no reason to doubt that within the coming two years gold will be found in New Guinea proper, and in large quantities, but the search to be successful must be undertaken by a party fully equipped and with plenty of carriers, South Sea Islanders being the best and most reliable.

Having explained the early history of our administration of the country, let me tell you something of its inhabitants and their customs. There are three types of natives—Malay, Papuan, and Polynesian, all more or less intermixed. The estimated population is 400,000. What it is in reality it is impossible to say, as the interior is quite unknown. At the east end, or say East Cape, the natives are of a light brown colour, getting darker the further west you go, until opposite Torres Straits they are nearly as black as the aborigines of Queensland. All the men are erect as soldiers, with well developed chests and of medium height; the women, with some exceptions of course, are very good-looking, having regular features and graceful figures, and quite as adept at flirting as their white sisters. They are full of fun, and rather given to chaff.

RELIGION.

In the strict sense of the term they are without any decided form of religion, but at the same time they are most superstitious, more so even than the British were in the early days. They do not possess any temples of worship, but have wooden gods with which they decorate their houses. However, I have never seen them fall down and worship them, nor do they, as far as I know. They believe in all sorts of devils whom they must propitiate, but, strange to say, have no idea of any beneficent spirits working for their good, and if they had, they would not consider it necessary to propitiate such. When one of their tribe dies they believe that his spirit haunts his former home, and if he be a "Taubada"—a person of importance—a neat fence is erected round his (or her) grave, and quantities of yams, taro, betel-nut, and sometimes his native tomahawk and shield, are placed within the enclosure, which is held sacred or "tabu." Should he, perchance, die in Queensland, his spirit will not return to his birthplace, but will, according to their belief, be lost for ever. The natives, therefore, will be wild, and will, in all probability, kill the first white man they come across as an equivalent. I was present at several funerals or wakes, all of them being of women. When a woman dies they lay the corpse in the house, place beautiful wreaths of wild flowers on the body, the body resting on the knees of two of her nearest relatives. Her friends gather round, and they weep and wail all night long, making the darkness hideous with their groans, but some of them feeling real grief at their loss. At sunrise a canoe is in waiting, which conveys the woman's remains to her native place, which may be on an island a few miles away, where they are decently interred. Some more weeping, and all is over. Their method of going into mourning for the dead is very similar to our own. We wear black clothes, whilst they paint themselves black all over, like Christy Minstrels, so that it is difficult to recognise them, their natural colour being a nutty brown. The period of mourning generally lasts about six weeks, and it looks very comical when the mourning is getting washed out, as then they appear brown and black until they have managed to get rid of it altogether. In some parts of New Guinea the women wear a net over the shoulders and breasts as a token of mourning, but the general custom is to go into black. With all their savagery, their different customs resemble many of our civilised ones.

MARRIAGE.

They have no priests to perform the ceremony. When a man has reached a marriageable age, say twenty, he looks out for a wife. He singles out a girl to his fancy, and has invariably to wait a long time before the marriage takes place, and it is very often a difficult matter for a young man to obtain a wife. When the day of the marriage has arrived, the young couple retire to the house which has been built for them, and are thenceforth looked upon by their relatives as man and wife. They keep the marriage state as inviolate as Europeans do. Of course on their wedding-day they give a spread, consisting of yams, bananas, betel-nut, and the fatted pig, to their friends, and, let us hope, live happily ever afterwards.

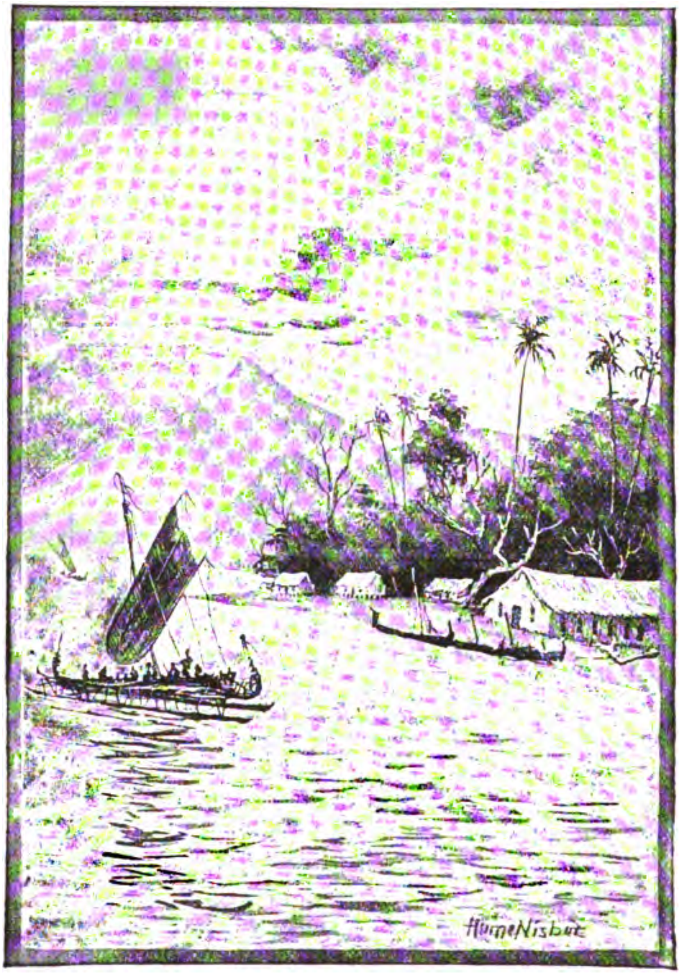
As a rule, the natives have only one wife; but in some instances two. They live in villages, all the houses in a regular line, well built on blocks five to six feet off the ground, the walls and roof made of the sago palm, each leaf being put on separately and slightly overlapping one another. The floor is made of "matu," or cane, the face of the roof in the form of a triangle. They also keep the ground in front of the houses very tidy, generally sweeping it once a day. The houses are surrounded by numbers of coco-nut trees, and, by a curious law of nature, the nuts fall principally at night time. Were it otherwise, it would be very dangerous, as the coco-nut is anything but soft. The children are bright and cheerful, happier and more contented-looking than any I have ever seen. They are always at play, using the spear in sham warfare, fishing, or swimming—in fact, take all the natives, men and women, they are always joking and laughing. Life seems to them one long holiday. Their wants, which are not many, are supplied by Dame Nature. Their food, their clothing, their houses, and their weapons, as Professor Drummond, in speaking of the natives of Equatorial Africa, tersely remarks, "One stick makes him a spear, two sticks rubbed together make him a fire, fifty sticks tied together make him a house," and so it is with the natives of New Guinea. The men ply about in their large canoes carrying a big mat sail, and it is surprising how quickly they can travel and how close to the wind they can go. They think nothing of travelling 100 miles in them. The women are generally employed in the yam and taro gardens and in cooking, which appears to take up most of their time, in carrying firewood, and looking after their babies. They treat their children very kindly, which is not sufficiently reciprocated. The boys are particularly bright and quick at learning anything, some of them picking up English pretty readily, although they prefer speaking their own language. The natives trade a good deal amongst themselves, in some instances taking sago in their canoes a distance of 300 miles, bringing back in exchange yams, betel-nut, &c. All are passionately fond of chewing this nut. They take it with lime, which they make by burning coral, crushing it into a fine powder, and placing it in a gourd manufactured out of a coco-nut, and beautifully carved. They also eat with it a leaf, which is rather peppery, but pleasant to the taste. The betel-nut grows luxuriantly in some districts, whilst in others there is none. Of course the constant chewing of it blackens the teeth, which, however, is considered quite fashionable.

All the women wear a grass petticoat, sometimes two, made from the coco palm, having two shades intermixed, brown and a whitish yellow. It looks most picturesque. They also wear a black band three inches deep round the arm, and it is so tightly put on that when they wish to remove it they are obliged to cut it, leaving ugly marks in the flesh. The men wear simply a leaf of the coco palm round the loins, with leglets, armlets, and streamers or wings from the shoulders, if they wish to look extra well. They cultivate a tremendous shock of hair on their heads, combing it out and dressing it with coco-nut oil several times a day. The combs are of their own manufacture, which, after using, they stick in their hair in much the same way as ladies wear a comb. The women, as a rule, wear their hair straight and cut short, the part over the forehead a little frizzy. All the men have the lobe of the ear pierced, on the outer rim of which they string small shells, like rings, also the cartilage of the nose, through which they put a long shell, well polished and fined down to a sharp point, giving it, at a distance, the appearance of moustachios. Like the heathen Chinee, they are as beardless as boys. The men do not converse much with the women, as it would be considered unmanly. They look upon themselves as warriors, and the women as labourers. It must not be understood from this that the women are ill-treated by them. On the contrary, they have a large voice in domestic affairs, and occasionally lord it over their masters. Yes, they have not only a powerful voice in domestic affairs, but also in the affairs of State. It is often the women who incite the men to make war, or to deeds of murder, rapine, and plunder; and should they hesitate to do it, the women rush wildly into their midst, fling their arms over their heads, become very excited, and harangue them in the following fashion: "What! you call yourselves men and warriors, and yet you are afraid to do this! Out upon you, you have not the hearts of men! You are more like a pack of old women! You ought to don the grass petticoat, stop at home, and do the cooking!" And thus the men, wrought to the highest pitch of excitement, must needs obey, or quietly submit to the taunt of cowardice flung in their faces. On the other hand, occasionally, by the timely interference of the women, outrages are prevented.

I cite you these instances to show you the position held by the women in relation to the sterner sex, clearly proving that they are not treated like the degraded slaves they too often are in other savage countries. No, the women of New Guinea are determined to have their little say, and take very good care they are listened to.

The weapons used to the eastward are the spear, tomahawk, club, shield, and a small spear something like a dart. To the westward they use the spear, club, tomahawk, mancatcher, and bow and arrow. They are wonderfully expert with the latter, being dead shots at a distance of eighty yards, a much more dangerous weapon, to my mind, than the spear. The bows are very large, strong, and beautifully made.

I visited a large district to the westward, named "Aroma," where I had the pleasure of an introduction to the great chief Koepina. He can place 4,000 fighting men in the field at a few hours' notice. He is an old man, very tall and erect, with a Roman nose, austere-looking, seldom speaks, but, like the renowned parrot, is a devil to think. Strange to say, in this district and to the west of it, the men wear no clothing whatever, whilst the women wear the customary grass petticoat. All the villages here have a high palisade fence facing the sea, and extending the whole length of the beach. Koepina often makes a raid on tribes in the adjoining districts, and generally returns successful.



Dinner Island (Samarai), China Straits, and Native Vessels.

FOOD.

Their national food consists of yams (equal in taste to the best potato), taro, bananas, sago, coco-nuts, fish, birds, pig, and occasionally human beings. Of course, in some districts food is scarce, in others a superabundance. They commence digging up the yams about the end of April, and in May hold a great yam feast or festival, at which hundreds of natives are present, all the various guests contributing pigs, yams, &c. They think nothing of killing over 100 pigs in one day, and there are cart-loads of yams and other food on the ground. They have a very curious method of dealing out the different parts of the pig. They cut up twine (which they make themselves) into various lengths, giving to each representative a length, each different length representing a different part of the pig, say, a holder of a short length receives the head, and so on. In fact, it is a kind of lottery—it is a question of heads or tails. All the girls are dressed in their best Sunday-go-to-meeting costume, which means a clean petticoat, with beautiful garlands of wild flowers round their heads and a necklace of beads encircling their throat. It looks lovely. The men paint their faces in the most gorgeous style, using different coloured pigments, and vieing with one another who can look the ugliest. They are also decorated with bands and streamers, and in their own opinion are dressed in the height of fashion.

After gorging themselves with food and coco-nut milk, the musicians strike up, using a tomtom—a kind of drum—and singing a New Guinea carol. The maidens dance round for hours in a ring, speeches are made by some of the leading men, and the excitement extends far into the night. A feast of this description often lasts from a week to ten days, during which time business is at a standstill, as they will not work at making copra or anything else until the feast is over. It is very similar in idea to our harvest feast in England. Should the yam season fail, which is not often, the natives suffer want, and have to live on sago and coco-nuts. Like all annual feasts, the amount of food wasted is great. There is one good quality about the yam—you can store them in a house, in which they will keep good for two years. They grow sometimes to a length of four or five feet, and weigh very heavy.

Cannibalism is still rampant in many districts, but in some places it has died out. They never eat a man who has died a natural death, only when killed. They consider human flesh far superior to pig, of which animal they have plenty; and, strange to say, cannibalism is just as rife in districts where other food is abundant as in those where it is scarce. They have no European prejudices regarding the human body, and they eat it with as good a conscience and as much gusto as we do butchers' meat. To a civilised person the idea is, of course, repugnant, but, we must remember, different countries have different customs. The natives living on the coast have acquired the habit of smoking, and very soon become inveterate at it. They would sell their souls for tobacco.

There are islands to the north of the mainland where tobacco is entirely unknown, but before many years it will reach them also. The women are not heavy smokers, and are never to be seen with a clay pipe in their mouths. They prefer smoking the bau-bau—a family pipe made out of bamboo. It is a hollow piece of wood, three or four feet long, circular, with a big hole at one end and a small hole on the top. The tobacco is rolled up in a leaf, like a cigarette, placed in the small hole, lighted, the smoke is blown into the pipe, the cigarette is then removed, the pipe is held in both hands, a couple of draws are taken, when it is handed to the next person. The cigarette is again inserted, and the process repeated. When smoking the bau-bau they seat themselves in a circle. It is always artistically carved, and is a great favourite with the women.

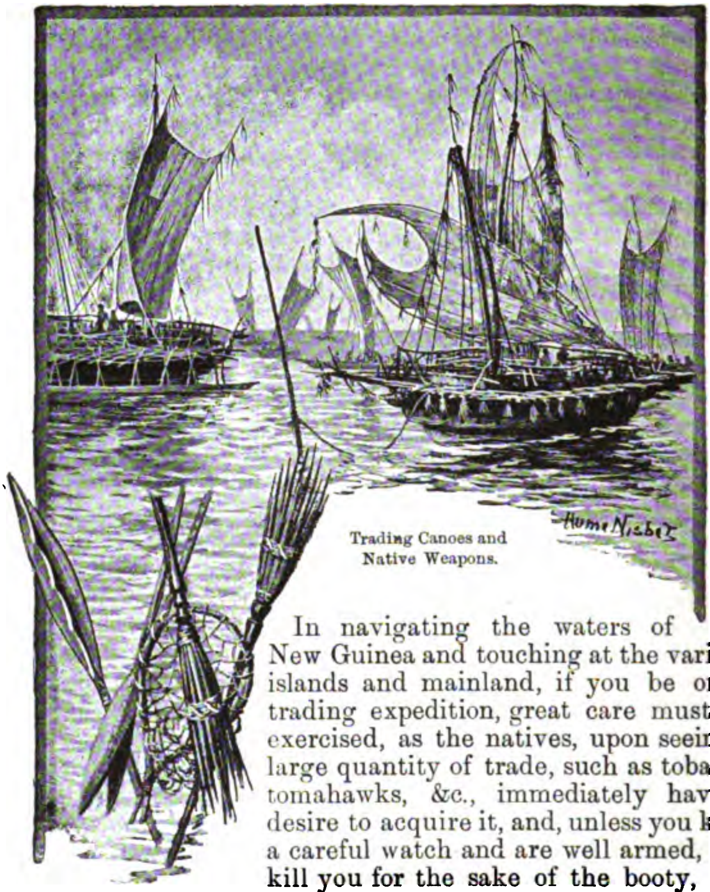
LANGUAGE.

Their language is not unlike that of the Maoris of New Zealand, and, like it, is made up of numerous dialects. When you reach the Motu district—say Port Moresby—the language decidedly changes, and differs entirely from that of the south-east or east end. It is not very difficult to acquire. If you mix with the natives, and take some interest in your task, you ought to be fairly proficient in twelve months. I am conversant with the language spoken on the south-east coast, and, therefore, will confine my remarks to that part.

Like Italian, every word ends with a vowel. The vowels a, e, i, o, u are pronounced ah, eh, e, o, oo; ai as i, au as ow, and r at the beginning of a word as l. The declension of nouns and pronouns is very simple, as for example: Man, *tau;* father, *tamada;* my father, *tamagu;* woman, *sina;* mother, *sinana;* my mother, *sinagu;* I, *yau;* you, *kowa;* me, *yau;* we, *ta.* You, when used alone, drops the last syllable *wa,* and becomes *ko* or *ku,* as follows: I go away, *yau erau;* do you go away, *kurau* (in the imperative sense); we go away, *tarau.* They have no c in their vocabulary, the letter k being used instead of it.

Their musical instruments are very primitive, but their singing is good, as they keep capital time, and, as a rule, have very fair voices. They are very fond of singing, their songs generally being an account of a canoe's journey, of how they got on, or about some fight that took place years ago, and occasionally about the only girl they ever loved.

The natives, generally speaking, are most treacherous, but are not all tarred with the same brush. The bush tribes are infinitely more savage than the coast natives, and the latter have a wholesome dread of them, as the bushmen periodically make a raid on the coast, when there is the piper to pay. The bushmen are also much dirtier and more unkempt, evidently being totally ignorant of the benefits of a bath.



Trading Canoes and Native Weapons.

In navigating the waters of New Guinea and touching at the various islands and mainland, if you be on a trading expedition, great care must be exercised, as the natives, upon seeing a large quantity of trade, such as tobacco, tomahawks, &c., immediately have a desire to acquire it, and, unless you keep a careful watch and are well armed, will kill you for the sake of the booty, and then set fire to the vessel. Many a vessel and many a white man have met that untimely fate during the last three years, amongst them several of my friends. Looking at it from a philosophical point of view, this desire on the part of the natives is but natural. How often do we, with our boasted centuries of civilisation, envy a man his wealth and riches, and if it were not for the strong arm of the law might even go to the extremity of killing him for the sake of plunder ?

The coast runs as nearly as possible W.N.W. and E.S.E. It has a most bold appearance, mountains of alpine height from 9,000 to 13,000 feet rearing their heads, looking down in their awful majesty, backed by lofty ranges covered with dense scrub. The geological formation is sometimes basaltic, at other times slate, &c.

There are several magnificent rivers which carry off the great torrents of water from the mountains, notably the Fly, which is navigable for 500 miles from the coast; the Baxter, San Joseph, Aird, and Tait.

ANIMALS, ETC.

There are no wild animals in the strict sense of the term, the principal ones being the wild hog, cassowary, wallaby, tree kangaroo, cuscus, opossum, and alligators. Snakes are to be found, but are not so numerous as in Queensland. There are numbers of beautifully plumaged birds—the bird of paradise, of which there are many varieties, whose haunt is the tallest trees on the hills, and only met with on the mainland; forty or fifty varieties of pigeons, many of them of lovely hues; scrub hens, parrots and cockatoos, and the flying fox, which, when young, is capital eating.

THE CLIMATE.

The climate is very unhealthy, the tropical scrub being a harbinger of malignant fevers, malaria, &c., and it will take years of cultivation before it alters for the better. The natives, even, are subject to the fever, but in a milder form. The prevailing wind, which blows from the south-east, lasts for eight months, from April to November inclusive, when it veers to the north-west. The rainfall is heavy, especially at the eastern end, where there is no decided wet season, unlike Port Moresby, which has its annual rains in the months of January, February, and March, the remainder of the year being very dry, so much so that nothing will grow there, not even a yam.

PRODUCTS.

The chief products of the country are mother-o'-pearl shell, bêche-de-mer, and copra. The pearl shell is found in 20 fathoms of water, and is obtained by divers in a diving dress. The boats used for the purpose are small luggers from 8 to 15 tons register. The pump is worked by natives, and the crew consists of the diver, who acts as skipper, and a couple of South Sea Islanders or Malays. Great risk is incurred by the diver, the pressure from the depth of water nearly always producing paralysis and often death. The value of the shell in the London market, which has to be cleaned, scraped, and packed in cases previous to shipping, varies from £90 to £160 a ton, according to quality. It takes 600 shells to make a ton, and valuable pearls are occasionally found in the shells, in the belly of the fish, which is a gelatinous-looking subject like a jellyfish. The pearl is produced by disease of the shell, and is only found in grubby, worm-eaten ones. Pearl shelling in New Guinea is pretty well worked out, as no new patches have been found for some months.

The bêche-de-mer is a kind of sea slug found on the reefs in a few feet of water. There are about ten different species, differing greatly in value, some being worth £20 a ton, whilst the best, viz., teat, is of the value of £100 to £130 at the nearest Queensland port (Cooktown). The whole of it is purchased by Chinese merchants, and immediately shipped to Hongkong, where it is eventually retailed out at a very high figure. It is most nutritious and makes capital soup. The Chinese are passionately fond of it, and are the principal consumers. The method of obtaining it is to go with two or three boats full of natives to a large reef, choosing fine calm weather, when the natives dive for them. You then erect your smoke-house on shore, or, if the vessel be large enough, on board, get your boilers and boil your fish well. Your smoke-house should have three separate layers or slides, taking care to keep a good fire on, changing your fish from one slide to the other. The whole operation takes about three days. You then refill your boilers, and proceed in like manner. The fish should then be thoroughly cured. You now bag it in cornsacks, and previous to shipping capsize the bags, dry the fish in the sun, sort the various species and qualities, rebag them accordingly, and send them away.

Copra is made from old coco-nuts only. The husks are removed and thrown away as rubbish; the shells are then placed in a smoke-house and kiln-dried, or, when possible, sun-dried. The nuts are smashed up and then bagged. It takes about 7,000 nuts to make a ton, and the value in the London market is only £13 to £14 for kiln-dried, and £14 to £15 for sun-dried. Many natives are employed in this industry—the work always being done on shore, for which they are paid in trade. Of course, in these undertakings, you are always in a certain amount of danger from the hostile acts of the natives, but, as I said before, you have to exercise caution, and not give them a chance.

The soil and climate of New Guinea are well adapted for the cultivation of coffee, indigo, indiarubber, cotton, sugar, rice, tobacco, sago, &c. The natives have plantations of sugar-cane, which seem to thrive very well. They do not manufacture sugar from it, but simply chew the cane. They, however, manufacture sago, of which they are very fond. Oranges and lemons grow to perfection. There is a plantation of them at Su-au (South Cape), also on Teste Island. This industry, if undertaken by Europeans on a large scale, would, I have no doubt, pay handsomely.

Unlike Australia, New Guinea is never subject to periodical drought. and when it becomes better known British capital will be introduced, industries will spring up, and the country will eventually be developed and become the home of many of our fellow-countrymen.

NOTES ON THE RECENT DEVELOPMENT, EXPLORATIONS, AND COMMERCIAL GEOGRAPHY OF BRITISH NORTH BORNEO.

By Mr. A. COOK, of Sandakan, British North Borneo.

[Read to the Members in the Library, Tuesday, May 20, 1890.]

THE state of North Borneo, or British North Borneo, to which this paper refers, comprises the whole of the northern part of the island of Borneo, from Sipitong, on the west coast, in about lat. 5° N., to Sibucco on the east coast, in about lat. 4° N., and all the numerous islands around the coast. The coast line is about 1,000 miles, and the area is about 31,000 square miles. Thus we have a territory considerably larger than Ceylon, and nearly as large as Ireland.

The geographical position of North Borneo will be better understood by referring to a general chart. It will be seen that the island, which, next to Australia, is the largest in the world, lies about midway between the Straits Settlements, the Philippine Islands, China, and Australia, and that the northern part is on the direct tract of vessels trading between Australia and the countries named. This fact alone renders the possession of North Borneo of great importance to this country. Until 1888 this possession only meant that the country was owned and governed by a chartered company styled "The British North Borneo Company;" but Her Majesty's Government has now seen fit to declare a British protectorate over not only North Borneo, now called the State of North Borneo, but also over the territories of the Sultan of Brunei and the Rajah of Sarāwak, extending as far south as Tanjong-Datu, and thus accomplishing in one year the hope that has been entertained for centuries, viz., that British influence and commerce should be encouraged, protected, and developed in Borneo. The remaining portion of the island is under the influence of Holland.

Several very able reports and papers have been written since 1878, when the territory was ceded by the Sultans of Brunei and Sulu to Mr. Alfred Dent (now Sir Alfred Dent, K.C.M.G.) and Baron von Overbeck. In 1886 the country was well represented at the Colonial and Indian Exhibition held in London, and a handbook compiled from the various reports received from all sources, with an introductory paper by Sir Rutherford

Alcock, K.C.B., D.C.L., Executive Commissioner for British North Borneo, and Chairman of the British North Borneo Company, gives the best information as to the modern history, acquisition, geography, population, climate, trade, laws, and form of government of the country, with a copy of the royal charter granted to the British North Borneo Company. A new edition of the handbook is, I understand, in the press, and will shortly be issued. As time and the country progress, later and fuller information is needed, and everyone taking an interest in the development of the young colony will be able to secure a copy.

This paper is intended to show the more recent developments, exploration, and commercial geography of the country under the company's government. I wish to draw attention to the words, "company's government," because many people are under the erroneous impression that the British North Borneo Company is a trading concern, taking out large shipments of British goods, which they barter or sell to the natives of Borneo in exchange for the products of the country, following the example of the East Indian Company. The royal charter certainly gives power "to deal in merchandise, or carry on any lawful commerce, trade, or dealing whatever, in connection with any of the objects of the company;" but the main object is to civilise and govern, and the company has wisely confined its operations to this main object, and to attracting others to trade with and develop the resources of the country. It is scarcely reasonable to suppose that an enterprise like this could succeed in attracting capitalists and traders, if the government of the country at the same time competed with the capitalists and traders in their business. Although the cession dates from 1877-8, it was not until November, 1881, that the royal charter, incorporating the British North Borneo Company, was obtained, and not until the 1st of July, 1882, that the country was transferred to that company, by the provisional association formed by the founder, or original grantee already referred to. Considerable progress had already been made in forming the Government of the country under Mr. William Hood Treacher, the first governor, a gentleman fortunately well known to the natives as acting governor of Labuan, and acting consul-general for Borneo. There had already been formed the necessary establishments of officers, including a treasurer-general, residents, collectors, commissioner of lands, superintendent of public works, harbour and post master; medical, judicial, agricultural, gaol, scientific, and exploring departments, with an armed constabulary composed of Sikhs from India and Dyaks and Malays of Borneo. Stations had been opened at Sandakan, in Sandakan Bay; at Kudat, in Marudu Bay; at Silam, in Darvel Bay; at Abai, in Abai Bay; and on the Kinabatangan, Papar, and Kimanis rivers. A friendly intercourse had been begun with the inhabitants of the coast and interior—in fact, a government had been firmly established and adopted by the natives.

The trade at this time (for 1881) amounted to $160,650 in imports, consisting chiefly of brass-ware, building materials, cloth, earthenware, furniture, oil, live stock, opium, provisions, rice, salt, spirits, sugar, tobacco, and sundries. The exports amounted to $145,444, consisting of beeswax, birds' nests, camphor, damar, fish, guttapercha, indiarubber, live stock, opium, sago, seed-pearls, sharks' fins, shells, timber, trepang (a *bêche-de-mer*), and tobacco. At the same time the sources of revenue were a farm for the collection of the revenue on opium, tobacco, spirits, and pawnbroking; an import duty on brass-ware; an export duty on all jungle produce, including birds' nests, a house assessment, court fees, poll or head tax, inland passes, land rents and land registration, postal revenue, and profit on copper coins; from all sources the revenue for 1881 only amounted to $20,208.

The population was estimated at 150,000, made up of Malays Bajows, Sulus, and about 3,000 Chinese on the coast, with Dusuns, Idāāns, Muruts, Peluans, Buludupies, and other tribes of the interior. The provisional association had devoted considerable attention to the exploration of the territory and its resources. The Kinabatangan river, the largest and longest in the territory, had been explored by Mr. W. B. Pryer (the first resident). In 1881 Mr. Witti had traversed the country from Marudu Bay to Papar, and from Marudu Bay to Sandakan Bay; and it was in July, 1882, that this able and fearless explorer was treacherously murdered by natives, in the interior, on the Sambakong river, while prosecuting an exploring journey from the west to the east coast of Borneo. Mr. Frank Hatton, the company's scientific explorer, was at the same time in the interior. He had tested the oil-springs of Sequati, explored the country from Sandakan viâ Labok, to Marudu Bay; the Bongan and Kinoram rivers and Timbayuking mountains. It was in 1883 that he started with his assistant, Mr. Beveridge, to explore the Kinabatangan river for minerals. He ascended some distance beyond Penungah, from whence he retraced his steps and proceeded to explore the Segama river, reported to contain gold. The 1st of March, 1883, will long be remembered as one of the saddest in Borneo, for on this day the company's most promising scientific officer met his death by the accidental explosion of his own gun, while returning from hunting an elephant he had wounded. The superintendent of agriculture, Mr. Von Donop, had not been idle. An experimental garden had been begun at Silam, with the object of giving a fair trial to the tropical products most likely to suit North Borneo, and Mr. Von Donop himself had, in 1882, made several journeys into the interior to examine the soil. Meteorological observations were established at each station, and in every possible way the country prepared to show the planter and capitalist what it could produce.

The valuable edible birds'-nest caves of Gomanton, Madai, and Segalong, a cause of jealousy and contention amongst the natives of these districts, did not escape the provisional association, who sent Mr. Bampfylde to Gomanton to report on the out-turn, and also on the deposits of guano. The results of these various explorations and undertakings were made known at the time in printed pamphlets, which are still available at the company's office. In 1882 communication with Singapore (600 miles distant) was kept up by two small steamers, which made a trip about once a month. As yet nothing had been done to open communication with Hong-Kong and China, or to introduce Chinese labour into the country.

The *British North Borneo Herald and Government Gazette* was first issued in 1883, and it may be said that with the issue of this paper began the progress and development of the country; for, although prospecting for minerals and explorations had been energetically continued during the two preceding years, there had been no practical result, although specimens of copper, silver, and coal had been discovered, and numerous reports received of gold in the Segama and Kinabatangan rivers, and in the district of Silam. No mining, planting, or other company had yet been formed. It had, however, been proved beyond all doubt that the climate and soil of North Borneo was eminently suitable for tropical products, such as coffee, pepper, sago, cocoa, sugar, tapioca, fruits, cardamoms, and other spices, so as to give sufficient promise for the future. Tobacco of an excellent quality was found grown by almost all the natives of the interior, and this at once raised the hope that North Borneo might become a great tobacco-growing country. Almost the whole territory was found to be covered with immense jungles or forests of valuable timber, while the jungle products, such as rattans, guttapercha, indiarubber, beeswax, gum damar, edible birds'-nests, &c., were of great value, and an increasing source of revenue if properly looked after.

In 1883 the first planting company in North Borneo was formed, under the title of the Chinese Sabah Land Farming Company, which began operations in shipping timber and in planting tobacco in Sandakan Bay. In 1884-85 they produced a crop of some 400 bales, samples of which were submitted to experts, and elicited the following reports:—

> "I have the pleasure of informing you that the sample of Borneo tobacco you were kind enough to show me, and to let me test, is first-class, and in my opinion would, judiciously handled, readily be adopted by all cigar manufacturers in England and America as a perfect substitute for Sumatra leaf. I have no hesitation in saying that, with a little more care being taken in fermenting it, this tobacco should realise from 3s. to 4s. per lb. in first quality brown wrappers."—*Extract from Messrs. Salmon and Gluckstein's letter, dated 4th June, 1886.*

"Although we have seen as yet very little of North Borneo tobacco, and that in an unfermented state, we come to the conclusion that the tobacco is fully equal to Sumatra, and may later on be even better than Sumatra; it will be the tobacco of the future."—*Extract from Messrs. Westerveld and Co.'s letter, dated 15th June, 1886.*

"Since writing the above, we have sent up to the Colonial Exhibition and been favoured with a type of the tobacco; judging therefrom, and making all allowances for the fermentation not being settled, we have not the slightest doubt in asserting that the characteristics are most satisfactory as compared with those of the growth of Sumatra; the leaves are occasionally rather thick and the veins somewhat prominent; the sorting should have more attention; but all these faults can be remedied with care. The great point is, judging from the type we have seen, we can pronounce the growth a genuine cigar tobacco growth, and with more care will prove a most formidable rival to Sumatra."—*Extract from Messrs. H. N. Davis and Co.'s letter, dated 2nd July, 1886.*

At a meeting of tobacco brokers and others interested in the trade, held in the Conference Hall of the Colonial and Indian Exhibition on 6th August, 1886, under the auspices of the London Chamber of Commerce, the samples of British North Borneo tobacco were exhibited with others; and a report upon them has been made by Mr. C. A. Muller, of the firm of Messrs. Westerveld and Co. This gentleman having been for more than fifteen years largely interested in the culture of Sumatra tobacco, and thereby acquired an extensive and practical knowledge of its management as regards planting, importing, and sale, may be considered a competent authority on the subject, and his report is as follows:—

"The tobacco grown on the Suanlambah estate, North Borneo, as exhibited in the Colonial and Indian Exhibition, although not fully cured, promises to become a formidable rival to Sumatra, as soon as large quantities can be produced. The North Borneo tobacco is almost in every respect equal to the Sumatra growth, and certainly superior to that grown in Sirdang and in some parts of the Lankat district. It ranks with the Delhi tobacco, which is acknowledged to be the finest grown in Sumatra. The leaf of the North Borneo tobacco from the Suanlambah estate is full grown, healthy, strong, and elastic, broad and well feathered. The colour is good ripe brown; a large proportion is the rich dark brown, so much liked in England and America; and a fair quantity also of the light brown colour, so suitable for the German market. When this tobacco has undergone a full and careful fermentation, the colours will greatly improve, they will become more level, and lose the mottled appearance of the not fully fermented leaf. Then they will undoubtedly make very handsome cigars, and possess also the gloss so much liked in Delhi tobacco.

"The burning is very fair, although, as is well known, fresh, soft, imperfectly fermented types will at first not burn so white as those properly fermented. This is the case with almost all cigar tobaccos, Sumatra not excepted; and I have not the slightest doubt that the burning of the Suanlambah tobacco, after a careful and full fermentation, and if it has not been cut in an unripe state, will be found equally as good as the best Sumatra.

"The flavour and taste are, in my opinion, not inferior to Sumatra, and will also much improve after a full and good fermentation.

"The productiveness of this tobacco is great; one pound English weight of that shown in the Colonial and Indian Exhibition has produced or covered nearly 500 good middle-sized cigars. Thus 2lb., or say even 2½lb., to make sure, would cover 1,000 cigars. Now every man in the cigar-tobacco trade must admit that such productiveness is fully equal to that of Sumatra.

"On the whole, so far as we are at present acquainted with the North Borneo tobacco grown on the Suanlambah estate, it promises to become in all respects—texture, colour, burning, flavour, taste, and productiveness—equal to the best Sumatra tobacco; and considering that Sumatra tobacco has reached its zenith, and that a large proportion of the virgin soil, after nearly 20 years' standing, has been absorbed,

> North Borneo has a brilliant future, the more so as the Sumatra tobacco seems to get inferior from year to year, owing partly to the now limited area of virgin soil and partly to the enormously high dividends which Sumatra companies and planters made of late years, in consequence of which they all plant for quantity and not for quality, while the sorting has been sadly neglected. For those reasons, but more so on account of the extremely high prices which must be paid by second hands, not only the German, American, and English, but even the Dutch dealers (second hands) would gladly welcome in North Borneo tobacco a new rival. Mr. Harkema, a well-known Amsterdam broker, in his speech, expressed himself in the same way, and was full of praise of the North Borneo tobacco which he saw in the Conference Hall of the Colonial and Indian Exhibition. Messrs. P. Veerkamp Van Embden and Zoonen, also well-known Botterdam tobacco brokers, who received a small type of the Suanlambah estate tobacco, have a very good opinion of it, and believe that North Borneo has a brilliant future, if it produces tobacco like that shown in the Exhibition.
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> "Messrs. B. Morris and Sons, of London, an old and first-class firm of cigar manufacturers, state that the productiveness of the Suanlambah tobacco, of which they received a sample, is on a par with the first Sumatra leaf of average crop."

Unfortunately their capital was not sufficient to enable them to carry on and reap the reward which their first crop promised. But the work of this pioneer company was being carefully watched by others. The Count Geloes d'Elsloo applied for and secured a large area of the finest tobacco land in Marudu Bay, and in 1887 planted his first crop, which in every way satisfied the hopes and expectations of himself and his friends—so much so, that he had no difficulty in forming the London-Borneo Tobacco Company, with a capital of £100,000. The Baron von Stein was the next to open a tobacco-planting estate in Darvel Bay. Others soon followed, and at the present moment some twenty companies are opening tobacco estates in Marudu Bay, Sandakan Bay, Darvel Bay, Kinabatangan, Labuk, Sugut, and Segama rivers, while additional concessions are being applied for in almost every bay and river in North Borneo. The nationality of these companies is a striking proof of the success of the tobacco enterprise, and the confidence reposed in the administration. Eight of them are Dutch, or formed by Dutch gentlemen from Sumatra, Java, and Holland; one is German, and the remainder are English companies, formed in London and Hong-Kong. The estates vary in size from 10,000 to 40,000 acres. This will give some idea of the number of acres being brought under cultivation. The tobacco grown in North Borneo is the fine quality used for covering cigars; and it may be mentioned that the prize recently offered by the London Chamber of Commerce for the best sample of tobacco grown in any British colony was equally divided between British North Borneo and Jamaica, the former for superiority in market value, and the latter for superior smoking qualities. This tobacco from North Borneo was grown in Marudu Bay, on Count Geloes' estate of Ranow.

Several of the companies farmed also plant coffee and pepper. In timber a large trade is in prospect. The British Borneo Trading and Planting Company and the China-Borneo Company have erected extensive steam sawmills in Sandakan Bay, and carry on a large export trade in rough and sawn timber. This is sent to China, Singapore, and England. Steps are also being taken to open a trade with the Australian colonies, where samples of North Borneo timbers and products have been exhibited with such success as to obtain a gold medal at the Adelaide Jubilee Exhibition held in 1887.

The sugarcane grows so luxuriantly as to attract the attention of the Dutch sugar planters in Java, who find it advisable, on account of some disease in the canes grown there, to look elsewhere for a new stock. Already land has been applied for with a view to growing and exporting sugar tops to be planted in Java. This points to important results for the future, as it is reasonable to conjecture that, if North Borneo can supply sugar tops or plants for transportation to Java, the growing of canes for manufacturing into sugar on the spot is only a question of the necessary enterprise and capital. There is no doubt as to the capability of the soil, situation, and climate, or of the quantity available.

Tapioca is another product which is successfully grown in North Borneo. Every native who owns a house possesses a small patch. Tapioca planting is a favourite industry with the Chinese, the reason, no doubt, being the quick return given for the money invested, as the cuttings are planted and the crops secured in about eight months, almost as quickly as tobacco, if the time required for fermenting the latter be taken into consideration. Sago growing and manufacturing is also an important industry, but as yet it is only in the southern provinces that it is produced in sufficient quantities for exportation. This palm is indigenous to Borneo. The natives are being encouraged to grow it wherever the soil is available. It requires wet flat soil, and seems to flourish best in the fresh water swamps and wet plains, just beyond the tidal limit. The natives are also encouraged to grow coffee, pepper, cocoa, and fruit trees—a constant supply of these is issued free to them from the Government Experimental Gardens at Silam. In short, they are being taught to give up placing their trust for the future in jungle produce, which must disappear as the land is taken up for cultivation.

Gambier and indigo are found growing wild in many parts of the country, and before many years we may expect to see large and profitable estates of these industries.

So much has been done to develop the agricultural resources of the country. In other directions the company has not been idle.

The seas around North Borneo have long been famed for their valuable produce. Up till 1883 little had been done to discover or develop it, but within the last two or three years laws and regulations have been framed and issued for its protection. Seed-pearl oysters have been discovered and are worked under Government supervision in Padas Bay, Marudu Bay, Sandakan Bay, Linkabo in Labuk Bay, and at the entrance to the Maroap river. The mother-of-pearl oysters are found in Marudu Bay and the seas around Darvel Bay and Omadal on the east coast. Edible oysters are also found on the rocks near the coast. These are collected and dried by the natives and sold to the Chinese traders, who export them to China. The same oyster does not object to make its home on the mangrove branches between high and low water—in fact, oysters may be said to grow on trees.

Keemah or clams are also collected, dried, and exported in the same way. Turtle eggs are found on many of the sandy beaches of the islands around the coast. These are now farmed out to the natives, who collect and bring them to market in the proper season. Shark-fins and seaweed (agar-agar) are collected, dried, and sold as usual. Although some progress has been made in discovering and conserving the sea products named, there yet remains much to be done in this direction. I have remarked that the sea products are collected and brought in by the natives. These natives are the Bajows of North Borneo, a wild-looking gipsy race—in short, a remnant of the former pirates who haunted the coast. They still look upon the sea and its produce as their own, nor are they disturbed in this belief, but the Government arranges to guide and assist them in conserving it. So well has this been done, that these people, who can muster about 5,000, come and ask advice about the most simple matters. They are the reserve navy of North Borneo, and are divided into several fleets, with their admirals, commodores, and captains, just as we find in more civilised countries. It is no uncommon sight to see from twenty to forty sail entering or leaving Sandakan, Marudu, or Darvel Bay.

The edible birds'-nest caves are worked under Government regulations. They are let yearly to the natives, who had, and have, the best right to collect the nests. The result is most satisfactory to themselves and to Government.

The guano deposits formed in the caves in North Borneo have not yet been worked, but these will doubtless be utilised by the numerous tobacco and other estates in the future.

The minerals of North Borneo have long been reported as gold, diamonds, silver, lead, tin, copper, antimony, cinnabar, coal, iron, and mineral oils. Since the unfortunate death of the scientific explorer, Mr. Frank Hatton, Government rewards have been offered to natives and others for the discovery of any valuable or useful mineral. Captain R. D. Beeston was the first European to discover gold in 1883 in the Segama river. Nothing, however, was done until 1884, when some natives brought a small quantity from the same river. Mr. Henry Walker, commissioner of lands, was despatched to confirm the find. He not only did so, but, proceeding with great difficulty far into the interior, found gold in many places in valuable quantities. After this, small parties of natives and Chinese ventured to go in search of gold; but, although they found gold sufficient to repay them, the distance from any station or food supply (the nearest being Silam or Sandakan) was so great as to discourage them. Early in 1886 Captain Beeston started on another journey to explore the Segama. His reports of May, 1886, are referred to in the company's handbook, where it is stated—

> "He found the country just below Pula Kawak highly auriferous and covering a large area. Above the Pula Kawak all the beaches hereabout contain gold, and all would pay to work systematically. Above the Bole, a tributary of the Segama, the whole of the Segama river is one endless chain of payable beaches, some richer than others, but invariably the gold is coarse."

Speaking of the tributaries, Captain Beeston reports—

> "That on the Bole Besar four Chinese with a cradle got gold worth $17.20 or $4.30 per man for the day's work. The Malays were equally successful with their wooden dishes. At Rocky Creek, another tributary of the Segama, gold exists both in the banks and in the river bed. Alligator Creek has payable gold at its mouth."

He concludes by saying—

> "That payable, and in some cases highly remunerative, diggings exist in the main Segama from the Dusun Kampong to the highest point reached; and that in addition five streams reported on separately contain gold in large quantities. The source of the Segama, I think, is in the hills between Silam and Madai, and the inference is that the hills in this locality contain the material from whence the gold is washed down the main Segama, and that the hills thereabout, most probably, almost to a certainty, contain rich quartz reefs."

In 1888 Captain Beeston made another expedition to the interior of the Segama. This time he was accompanied by Mr. Sefton, a well-known and successful Australian explorer, Mr. Allard, on behalf of his company (the British Borneo Gold Mining Company), and a Mr. Amos on private account. The party successfully reached the highest point, where the Segama is a mere stream. They encountered many rapids, over which they had to haul their canoes before reaching this point, and now they had to wait for provisions expected in a few days by a party sent back to Etok-Batu Store. The few days stretched out to thirteen, and during the greater part of the time the party had nothing to subsist on beyond a few fish and a moose-deer, which their dog Joe had managed to capture. "Poor Joe" only saved himself from being eaten by his starved appearance. The explorers were now too weak to proceed, and had to return to Silam, which they had just managed to reach. Although this party was not successful in discovering the matrix, or quartz reef, or source of the gold, they confirmed all previous reports as to payable gold in the river beds, banks, and beaches, and gave hopes of remunerative employment to a large population in the near future. The white digger is not encouraged: the climate is not suited to the white man working out of doors, even in the shady jungle. He could not move about, or travel, or feed himself as he could do in Australia, and the probability is that he would either lose his health or become disappointed. To the native or Chinese labourer there is every encouragement: boating and jungle travelling does not enervate them as it does the white man. On the Segama there is room for thousands of both. The present difficulty is the want of a road to the interior. Mr. S. B. J. Skertchly, managing director of the British Borneo Gold Mining Company, who have large mining concessions on the Segama, has endeavoured to solve this difficulty by personally examining the country and tracing the road from the river Tinkayu in Darvel Bay to the Segama. The distance will be about 30 miles, and the Government are now taking measures for making a road over Mr. Skertchly's track. This will bring the gold miner and digger on the Segama within two or three days' distance from the Government station of Silam. Mr. Skertchly and his assistant, Mr. Allard, having reached the Segama, soon satisfied themselves as to the existence or non-existence of payable gold, and the result is that the company which he represents are preparing to operate on an extensive scale.

Within the present year concessions for dredging for gold in the Segama river have also been granted by the Government to a London company. In Borneo the Government is encouraging and assisting respectable parties of Chinese to settle in the district. Samples of stream tin, copper, galena, cinnabar, and diamonds have often been brought in by natives, and the hope is entertained that the reward offered by Government for a payable find will soon have some practical results.

The southern province, which was acquired from the Sultan of Brunei in 1885, contains a valuable seam of coal. This valuable mineral also crops out in several other localities, including Marudu and Sandakan Bays, and will probably be worked before long, as application has been made by a syndicate for a coal prospecting concession in Sandakan Bay and district. The Central Borneo Company, a large company recently formed in London, having also mining concessions in several other districts, and have a prospecting staff at work.

In granting prospecting concessions, the Government of the country adopt the surest means of discovering its mineral wealth.

The exploration of the Padas river, in the latest acquired southern province, has been ably performed by Mr. D. D. Daly, late acting resident of the West Coast District. This river is rich in sago, and has a large population of Besayahs, Muruts, and Peluans, who live on its banks and in the interior. The river has two branches, which rise about the centre of Borneo, where the inhabitants are Muruts and Peluans, who plant paddy, sugarcane, and tapioca sufficient for their own wants. They also collect jungle produce, such as guttapercha and indiarubber, beeswax, nests, &c., which is brought to market on the Padas river, and bartered or sold to Chinese or native traders. Mr. Daly has added much to the geography of the country by his reports and maps on the Padas and Kinabatangan rivers. His sudden death from fever in June last causes a great loss to the company and to science.

The British North Borneo Company has not arrived at this stage without encountering difficulties. Blood-feuds between the tribes in the interior had to be dealt with, and sometimes it was found necessary to punish them.

For administrative purposes the territory of British North Borneo is divided into nine provinces, as will be seen in the map. They are named in honour of the gentlemen who made the company, and who are now its directors.

The form of government as described in the handbook is distinctly British, following that of British colonies, particularly India, a country and climate not unlike Borneo. The Indian Civil and Penal Codes and Evidence Act are followed; land, harbour, customs, gaol, partnership, postal, and other laws and regulations are in force. Local ordinances are made as required. The company has a copper coinage and note issue of its own; its treasury at Sandakan, the capital town, and at the principal stations, performs all the functions of a bank; and it does money-order business with almost all civilised countries. One of the Eastern banks (the Hong-Kong and Shanghai Banking Corporation) has recently opened a branch in Sandakan, but as yet the requirements of the country are hardly met as regards banking.

The condition of the native races in North Borneo has been greatly improved. The piracy and enforced slavery, once the curse of the country, has been abolished. The company has faithfully carried out the terms of its charter, and have not only discouraged slavery, but have rendered the country practically free of this hindrance to civilisation.

The religion of the natives is not only respected, but those who profess any, such as Mohammedanism, are protected. At Sandakan a mosque has been built, and in each district a paid priest is appointed, who attends to their religious wants, marriage rites, and customs. A law provides for the registration of all births, marriages, and deaths. The Chinese also have their churches or joss houses, and under the law follow their own religion. At Sandakan there is an English school and church. The clergyman is appointed by the Society for the Propagation of the Gospel, and maintained by it and the Protestant community. A branch has been opened at Kudat in Marudu Bay, and is largely attended by Chinese. There is also a Roman Catholic Mission, with headquarters at Sandakan. This mission has several priests throughout the territory, and the schools which they have established are well attended.

Immigration and the supply of labour to North Borneo is perhaps the most important question of the moment. The agricultural resources of any country cannot be successfully developed without a constant supply of cheap and good labour. In this Borneo is more fortunate that most tropical countries. Her population, though very independent and poor agriculturists, are experts at boating, felling the jungle, making rough houses, palm-leaf roofing, and mats. They will work, and even dig, for strangers or foreigners if properly treated. China must, however, be looked to as the permanent source of supply. The distance from North Borneo is only 1,200 miles. Every encouragement is given to Chinese agriculturists to come to North Borneo and make it their home. Many have taken advantage of the favourable terms offered by Government, and the nucleus of permanent settlements has been begun in several parts of the country.

Steam communication has been opened with Hong-Kong, and two steamers are engaged in supplying the labour requirements of the estates and country. Six other steamers bring coolies and provisions from Singapore, and take back the produce of the country. Several sailing vessels are engaged in carrying timber to China, while about twenty steam launches of various sizes (three of which belong to Government), and numerous trading crafts, keep up communication between the stations, estates, and rivers.

The population is increasing at the rate of about 1,000 per month. India is also looked to as a probable source of labour supply, and the hope is entertained that the Indian Government will place no obstacle in the way of immigration to North Borneo, where the government of the country is like their own, and where every coolie is registered and protected under the Estates Labour Ordinances.

The foreign trade returns of North Borneo for 1888 give the value of exports as $447,569, and the imports as $1,261,997, while the revenue and land sales for 1889 are estimated to realise about $421,000. The expenditure is estimated at about $382,000. These figures give sufficient encouragement to the shareholders of the company, and if compared with the figures for 1881, which I quoted at the beginning of this paper, they give some proof of the success of the undertaking.

These results have not been arrived at by oppressing the natives and people by taxation, but by developing and improving the natural resources of the territory. Indeed, I do not believe there exists a civilised country where the taxes are so light as they are in North Borneo. There is no tax of any kind on food or clothing. Even the taxes on opium, spirits, wines, tobacco, matches, and salt which exist, bear no comparison with other countries.

Communication with the interior of North Borneo is by river or native roads. As yet there is no railway, although the time is doubtless drawing near when this will become necessary, especially through the centre of the country, near the watersheds of the different rivers, which cannot be reached by boats. Meantime, and for all time, the country has in Sandakan, Marudu, Darvel, Gaya, and Ambong, bays and harbours such as few countries can boast of, and in her navigable river system ready-made permanent highways to and from the interior.

Few people who have seen North Borneo as it was and as it is now can doubt the success of the undertaking in every way, and not the least is the civilising of a hitherto unknown country, and the extension of British trade and commerce.

BOOK NOTICES.

Commercial Geography, having Especial Reference to Africa. By J. H. Silberbach. Geo. Philip and Son, London. 1890. Price 4d. 4to, 32pp. Map of Africa.—This is one of the handbooks prepared by Mr. Silberbach to illustrate the method of teaching Commercial Geography introduced by him in the Wirral Diocesan Schools, of which he is one of the honorary managers. The handbook is intended for the use of the teacher, who has before him one of the boxes filled with the native products. The handbook will commend itself to all teachers, giving a large amount of information, intelligently, and in an interesting form. We hope Mr. Silberbach may have the opportunity to develope his method in regard to other parts of the world.

To South Africa and Back. By John Finch. Ward, Lock and Co. 1890. 186pp., with numerous Illustrations.—This book is the record of a journey through Cape Colony, Natal, Orange Free State, and the Transvaal, and includes visits to the diamond and gold fields. It is a very readable little volume, with a number of full-page illustrations. The description of the voyage and of the incidents of travel are lively reading. The saddest part of the book is the description of the leper settlement on Robben Island. The book will interest many of our members, particularly those who have been to South Africa, or those who are interested in the mining and farming industries of the South African Colonies.

Liberia. By Herr J. Büttikofer, Curator of the Royal Museum of Zoology, Munich. With 5 Maps, 37 Illustrations in the text, and 18 full-page Views. 440pp. Vol. I. Leyden: E. J. Brill. 1890.—This is a careful, well-illustrated description of Liberia, and will, when completed, become the text-book for students of that republic. We have long wanted a book of this kind, and are very glad to welcome this scholarly work. The present volume describes the country generally, paying particular attention to questions of natural history and botany, the districts of Monrovia, Cape Mount, the Queah River, and the inner lands being dealt with. The remainder of the country will no doubt be described in the concluding volume. The book is one of great interest, and some of the illustrations are very striking, whilst the carefully-drawn maps will render the book permanently valuable.

LOCAL GEOGRAPHY.

By Councillor JOSEPH HARDING, of Preston.

[Read to the Members in the Library, March 1st, 1890.]

In looking over a subject upon which to address you this evening,* it occurred to me that home would not be altogether uninteresting. I have therefore chosen as my subject, *Christ Church Ward*, feeling certain that we might profitably spend a short time in glancing at a few of the very many interesting facts and histories that surround us.

Christ Church Ward, which I have had the honour to represent for over the last nine years as one of the six members in the Council, comprises the area of the town of Preston bounded by the River Ribble and Marsh Lane, Bridge Street, Friargate, Market Place, Glover's Court, and Glover and Frenchwood Streets.

The ward was first formed in the year 1835, on and as a result of the Municipal Reform Act, the town being then divided into six wards; and, subsequently, by the Act of 1881, through the extension of the borough boundaries the wards underwent a further change.

The population of Christ Church Ward, according to the corporation return, is 13,160. This calculated at five persons per house, as an average, gives 2,633 houses. This ward is the healthiest in the town, as seen from the following table extracted from the medical officer of health's (Dr. Pilkington) last annual report:—

TOTAL DEATHS, RATE PER 1,000.

St. Peter's Ward	23·40	St. John's Ward	19·86
Park Ward	20·88	Christ Church Ward	17·47
Fishwick Ward	26·22	Maudland Ward	18·96

In looking at the death rate, the question is one of importance, affecting the national and social welfare of the country. The rate per 1,000 is no doubt excessive; with our natural advantages it should not be more than 12 per 1,000 per annum. It naturally suggests itself that for this there must be some cause. To my mind we are not working on strict lines of sanitation. In very few words I would put this before you—matters worthy of thinking over. All, or nearly so, downspouts, conveying water from roofs of buildings, are wrong in construction. Funnels at the head are too contracted. Syphons are a delusion. They tend to foster disease instead of preventing and dispelling it; and as a general principle all pipes are too small to effectually carry out and provide for effectual ventilation.

The best example, to my mind, in Preston, is that adopted by Mr. Reah, the borough engineer, in his own house. I confess that I have not seen it so fully adopted before, but so far as I have had the opportunity of judging, it provides the requirements of a great sanitary necessity.

Instead of closing up street gratings, multiply, if possible, a thousandfold—*ventilate, ventilate.* The opponents of this school should endeavour to make themselves acquainted with the first principles, the A B C, of chemistry; for if there is any truth in science, their anti-dogmas will go to the four winds of heaven, the only place suited for sewer gas, and the safeguard of health.

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* Read to the Christ Church Young Men's Society, Preston.

It is not at all singular that our death rate should be so low, though at the figures at which it stands, 17·47 per 1,000, it is far more than it ought to be. There are many reasons to account for the advantages of our ward in the health of its inhabitants. Primarily, the situation being on the south-west of the town, the prevailing winds, for the greater part of the year, coming from these points of the compass, necessarily give us the first breath of pure air. Again, the ward has the advantage of the parks, and generally more open spaces and areas in, around, and near to the dwellings. Bounded as it is, it escapes, to a considerable extent, the sewer gases of the town, the sewer gas finding a vent for the most part in the higher districts. The elevated lands of Penwortham point to the most healthy and eligible sites for residential properties in the early future.

Speaking generally, further legislative powers must be obtained by the corporation, and rigidly enforced; efficient and extended ventilation must be provided for both main and minor sewers; the adaptation of and connection with all tall chimneys in the borough as ventilating shafts must be insisted upon; last, and most important of all, we must inculcate the necessity of perfect cleanliness, the observance of the simple laws of sanitation, and motherly care and forethought in nursing and feeding children, for our infantile mortality is a blot upon the inhabitants of Preston. Without these the corporation sanitary authorities may toil in vain, in Christ Church and all other wards of the town, to lessen the continued very excessive gaps that death is making in our population.

The rateable value of Christ Church Ward is £92,941 15s., that of the whole borough being £339,440 5s. When the Ribble docks and works are advanced to allow of substantial shipping, it is certain that no ward will increase in a greater ratio of rateable value.

Christ Church Ward has largely been the scene of many of the stirring events of the past, notably the revolution in the 17th century.

On the 10th of February, 1643, Preston was stormed by the Parliamentary forces and taken—the attacking army proceeding from Manchester, reinforced by contingents from Bolton and Blackburn, attacking from the south or the river side of the town. Further scenes of fighting took place in 1648, 1651, and 1714. Along Broadgate, in the bed of the Ribble, near Penwortham Bridge, are remnants of what appear to be old oak stakes or piles; tradition states that these were fixed probably about 1648, for the purpose of constructing a bridge or ford for the soldiers to pass over in the troublesome times of Charles I. and Cromwell. One thing is certain, that very great fighting took place along the Penwortham and Walton sides of the river, and in these troublesome times the only bridge over the river was one near the present Walton Bridge. Whilst mentioning this I would call your attention to the numerous skulls and bones found in the excavations of the new river diversion. It is not all improbable that these have been washed there and deposited where found by the ever-varying channel of those days, being portions of the slain most probably in the terrible battle of 1648. More recent dredging operations, near the Naze, have brought to light skulls, embedded in the blue clay, which may have lain there for many generations.

In passing, I may just allude to the fact proved by science that Preston, and indeed the whole of the country, was once under water, and this accounts for the sea shells and sand found in the excavations in Christ Church and other wards.

My object this evening, however, is more to look at my subject in the light of the present and not of the past generations. I have brought here, for your inspection, a very excellent copy of Shakeshaft's Map of Preston, published, it is supposed, in the year 1809, which will the better enable us to form an idea of the ward in the early part of this century; also a lithographed view of the town, taken from the south-west. We are indebted for the loan of this to Mr. Wm. Ascroft, J.P. Eighty years have now passed away, and how altered and varied the district, all the result of the strides of science and education—the firstfruits—"Ring out the old, ring in the new."

Professor Huxley stated in his presidential address before the British Association, at their annual meeting held at Dublin during the year of his presidency, "that whatever were the strides made in science during the past fifty years, they were as nothing in comparison to those that will be unfolded to the world during the next fifty years."

The utilisation of water, generating steam as a motive power, has resulted in the invention of the railway system, and to the fact of the railways we owe not a little in the development and prosperity of the ward.

It is worth our while very shortly to glance at this. We have at the present time three separate and distinct companies owning land, and portions of their railways passing through the ward, namely, the London and North-Western, Lancashire and Yorkshire, and West Lancashire Companies, with running powers granted to other companies.

The London and North-Western Railway Company had the first railway station a few yards west of the Victoria Hotel. It was opened for traffic about the year 1838. Subsequently the station was removed to the old station which we all remember on the site of the present commodious and handsome station. The Lancashire and Yorkshire Railway Company always have had a distinct railway station fronting Butler Street. These two companies conjointly in certain proportions own many acres of land in Christ Church Ward. What is commonly called the Preston and Wyre Railway is owned through the ward—two-thirds by the London and North-Western Railway Company and one-third by the Lancashire and Yorkshire Railway Company.

The West Lancashire Railway in the borough only approaches and terminates in Christ Church Ward. All being well, this line will be developed at an early date, and materially add to the prosperity of the district and town.

The railway companies are by far the largest ratepayers in the borough.

What is commonly known as the Lancaster Canal has its terminus in the ward. It was owned by "The Lancaster Canal Company," subsequently purchased by the London and North-Western Railway Company, in whose hands now rests the proprietorship. The canal was first opened in 1798, from Preston to near Burton, in Westmorland; afterwards, in 1833, completed to Kendal, under the same company. I believe, in 1802, communication was made between Preston, *via* Canal Bridge, the Summit, and Leeds and Liverpool Canal. All of us remember the old tramway bridge, its wagons, quaint machinery, &c., all antiquated relics of the past. With the discontinuance of the tramway and its hoisting apparatus an arrangement was come to between the London and North-Western Railway Company and the corporation, amongst other things the railway company conceding to the corporation the site of the tram line from Garden Street, including the Tram Road Bridge, to a point nearly opposite Penwortham Factory. Hence the pleasantly planted, beautiful promenade and walk the people of Preston enjoy over the river, free of cost or toll. The corporation, on the other hand, gave up to the railway company all rights to the ancient footpath that used to go from Garden Street, under the railway bridge, to Walton's Parade. These were the main items of the agreement, and have proved to be of mutual benefit and advantage.

There is a singular matter in reference to the canal, though it only slightly touches within the boundaries of the ward. It may be remembered that the London and North-Western Railway Company opposed the Ribble Bill of 1882-3. The only ground upon which this opposition was founded was the power given by an obsolete Act, though still in power, to pump out of the Ribble water to supply the needs of the Lancaster Canal. The opening can be seen in the face of the quay wall, nearly opposite the Victoria Warehouses. The culvert passes along the north side of Marsh Lane, and ends in close proximity to the Preston Saw Mill Company's premises. Should there be any scarcity of water, supplies are amply provided by reservoir storage, more than ample to supply its necessities.

In the latter part of the last century, at the time of actual construction, it became obvious to the proprietors of the canal that if a connection could be made between the Lancaster and Preston Canal with the Leeds and Liverpool Canal direct, thus connecting the North, Preston, Liverpool, the Lancashire coalfields, and Yorkshire, a great impetus to trade would be the result. In order to effect this connection it would have been necessary to construct an aqueduct on the site of the present Tramway Bridge, and from this to the terminus of the canal, at the coalyards, with the Leeds and Liverpool Canal at the Summit, which is about one mile above the village of Bamber Bridge. With this object in view the eminent engineer, Mr. Rennie (the first one), father of Sir John Rennie, was consulted. He made surveys, general plans and estimates, and in the year 1794 presented his report, estimating the cost at £94,979.

I pass on to consider the public parks that lie within the boundaries of our ward—the Avenham and Miller Parks. These have cost the town, in formation, laying out, and planting, £20,207, and the annual cost of keeping in order is £450. These figures I have gathered from the official returns of the corporation. All must admit that we, the inhabitants of Christ Church Ward, are singularly favoured in having in our midst such a great boon to health. In a few minutes we can retire from the "madding throng," and shut ourselves from the hum and babble of life. It has often struck me that our local parks and their approaches might be made more attractive. I have recently touched upon the question of "Landscape Gardening," and upon that I will not enter. I cannot, however, withhold from making a suggestion bearing specially upon the entrance to the Miller Park from West Cliff. The slope of the land to the right overlooks the cricket ground, both of which belong to the town of Preston. This slope is sheltered from the north and east, and I know of no more comfortable, sheltered spot in Preston. Instead of making this a nursery, which it practically is, to supply the constant necessities and requirements of the parks, why not lay it out in such a way that the masses of the people can beguile their Saturday afternoons in witnessing the very excellent cricket matches—a manly game that all sensible and intelligent Englishmen admire. True, it may militate against gate money, but I, for one, would sooner give them back the rent, and let them have the land for nothing. It is money well invested if it provides and gives to all sorts and conditions the happy change so necessary in this busy world.

Christ Church Ward varies in elevation above the sea level. Between Broadgate and the Town Hall there is a difference in round numbers of nearly 80 feet. It is singular to notice that from the Town Hall to the Unicorn Inn there is a fall of practically 50 feet. Moor Park Avenue and Fishergate at the Town Hall are nearly on the same level.

I will not weary you with the story of churches and chapels in our midst—they are well known and fully recorded by the past and present local historians, to whom I am much indebted for valuable information. The local records of the past affecting our own immediate district must and always will command our interest.

On two questions arising therefrom I will only dwell. First, the building of Fox Street Schools, the result being a special vote of thanks given to the Protestant friends for their generous help and assistance in contributing to the funds for the erection of a building dedicated to the cause of education. Secondly, in reference to the site of a Quakers' Chapel on the spot where Maudsley's shop is. The present corner, including a portion of Chapel Street, was used as a burialground. Under the present flags and buildings there are, at present, numerous gravestones recording the deaths and burials.

Rapid strides in the march of progress have been made in the present century. In 1809 Lune Street had no record—was not made—the principal road from Fishergate to Friargate being Chapel Walks. In the records of the past we find it noted that a grand theatre was erected at the bottom of Fishergate (our present Theatre Royal). During one decade, with scarcely an exception, did any town in Great Britain develope or extend more than Preston. I find it recorded that a gentleman called Mr. Knox erected a house in Marsh Lane—remembered by most of us as being erected nearly opposite the lower end of Wellfield Road, on the south side of Marsh Lane. This was designated Knox's Folly, the gentleman in question being considered insane in constructing and building a house so far out of the then confines of Preston.

There was in the last century a deep gully known by the appellation of Fishergate Chasm. This crossed Fishergate in close proximity to or near Spring Bank. Glancing at Fishergate it is easily seen that from Bow Lane to Broadgate it is filled up or formed above the level of the original ground.

The names of roads are singular and deserve a passing glance. Bow Lane can only be of one derivation—ere it verges into Spring Street it presents somewhat the appearance of a bow. Fishergate practically means *Fishers'* gate, Friargate *Friars'* gate, evidently from the history of the past. St. Mary's Catholic Church and Tulketh Hall, for generations previous to the early part of the seventeenth century, were the abodes of the friars and priests of the Church of Rome. Holywell Street points to a relic of the past, when there was a well supplying water to the inhabitants of the district. Fortunately, nowadays, the advance of science has proved that, without exception, no water in a well constructed in a town is fit for human consumption. That terrible scourge of humanity, enteric fever, or, to put it more plainly, typhoid fever, is only generated and developed by impure water or sewer gas.

In the days of my boyhood I well remember the general great love of flowers. The site of Harding's Stables, formerly owned and occupied by the late Mr. Bairstow, was charmingly cultivated, especially with dahlias, and for many years took first prizes at the local shows.

Many of us, comparatively young, are sufficiently old to remember extensive brickworks in the centre of the town, notably adjacent to Hill Place. Some of us, to our schoolboy sorrow, have had exploits in the claypits, especially when we could for the occasion borrow a few planks wherewith to construct a raft; and as home we went from school, our satchels, then a local institution, had the benefit of immersion. White trousers were then sometimes worn, and what a weary plight was the result.

The introduction of gas, in the year 1816, was a marked progress in the town. It is stated that Preston was the first provincial town lighted, and that the Preston Parish Church was the first sacred edifice in Great Britain lighted with gas.

Relics of the past are rapidly passing from us. In former days, in the early part of the present century, torches were carried by the residents of the town, and at the front of some of the houses were torch extinguishers—the last one, I remember, was in front of Stoneleigh Abbey Hotel, in Fishergate. I have a lively recollection in my early schooldays of seeing something wrong, for we had to grope our way home in the dark, the supply having failed. I am afraid that broken lamps in Fishergate were but types of naughty boyish miscreants.

Many notable men have in the past resided in our ward, all now shadows of the past.

I have abstained from entering upon the question of the Ribble development, and only slightly will I touch upon it, as arrangements are at present, and they are unlikely to be altered. The principal development of future shipbuilding will be in Christ Church Ward, lying between Fishergate Hill and Marsh Lane, some 25 acres being set apart for this object.

If material improvement has to be made in the ward as regards its health, further sanitation will have to be carried out. I look upon some of our roads, notably Hartington Road and South Meadow Lane, as anything but creditable to the corporation. In the recent sale in Corporation Street we are stultifying ourselves. We make by-laws and then are the first to break them.

Time passes, and I must bring my remarks to a close. The subject upon which I have ventured to address you is a large and comprehensive one, and cannot be grasped within one short address. I am honoured and obliged by your presence here this evening, and amply repaid if I have led any member to see that here are subjects that are well worthy of our interest and consideration.

NEW ATLASES.

The Modern Atlas of the Counties of England and Wales. 58 Maps and Index. Imperial 8vo. W. and A. K. Johnston, Edinburgh. Price 12s. 6d. 1890.—This atlas contains 58 county maps, fully coloured, on the scale of seven miles to the inch, and shows in each county all towns and a good many villages, railways (with stations marked), roads, canals, estates, and antiquities. The maps are all drawn to the same scale, which makes the atlas very valuable. The book is handy in size, the index full, and the maps are easy to read. It is a book to have at hand for reference, and is well done.

The Cosmographic Atlas. Imperial folio. Price 21s. Fourth edition, 1890. This well-known and very valuable atlas has reached a fourth edition. It is a book of great value for use and reference, and is especially of value to teachers. The work is very complete, and contains 40 political maps, with an index; 9 historical maps, with explanatory and alphabetical index; 3 classical maps, with explanatory letterpress and index; 4 physical maps, with explanatory letterpress; 5 Scriptural maps and 6 astronomical plates, with explanatory letterpress. We have no other atlas like this. It is very complete. The political maps are brought up to date. It is accurate and well printed. The volume is handsome, and must be exceedingly useful to students of geography. The price places it within the reach of all. No school library can be complete without a copy.

The Handy Royal Atlas of Modern Geography. By A. Keith Johnston, LL.D., F.R.G.S. Imperial 4to. Price £2 12s. 6d. W. and A. K. Johnston, Edinburgh and London. 1890.—This is a new edition, the maps, 51 in number, being brought down to date. The atlas is printed with the usual care of the publishers, the recent territorial adjustments are carefully noted, and for the purposes of a book of this kind, particularly to the British people, it is of great value. The book is, as described, "handy," with a copious index of about 60,000 places. The maps are pleasingly coloured, and it is a very admirable collection of maps.

DESCRIPTION OF A CONTOUR MAP OF HUDDERSFIELD AND DISTRICT,

Designed and Drawn by FRED. D. KING, Bradford. Published by E. J. Arnold, 3, Briggate, Leeds.

[Addressed to the Members at the Memorial Hall, Tuesday, Apri 15th, 1890.

It would be strange if the characteristic intellectual activity of our age had neglected either the science of geography or the art of map-making. Time was when the satirist might safely twit "Geographers," who,

> "in Afric maps
> With savage pictures fill the gaps,
> And o'er inhospitable downs
> Place elephants for want of towns."

But all that belongs to a vanished past. The age which put up with "Shakspere and the Musical Glasses" as an accompaniment to "The Use of the Globes," and which carefully balanced the Terrestrial with the Celestial globe, as ornaments to the library or classroom, was not likely to trouble itself greatly either as to the quantity or quality of the geographical information with which it was supplied.

To this age of ignorance and indifference with respect to geographical knowledge succeeded that of "the schoolmaster . . . abroad." Information, it was now held, could not be too widely diffused, and, in accordance with the new idea, cartographers filled their maps with a host of names, all of which were more or less important, but few of them equally so. That, however, was matter apparently for the learner. The cartographer had supplied a liberal allowance of facts: it was left to the industry and ingenuity of the student to classify and assimilate them. Unfortunately the task was outside his inclination and beyond his power. The natural consequence was that but little geographical information was gained, and that little, being acquired without relish, was lost without regret.

It would be asking too much to expect an average student in geography to construct a map in which the towns should be classified and graphically represented according to their relative importance with respect to population. An ingenious man, finding the position of a place on an ordinary map, and finding the population of it from his text-book, might put the two facts together and construct a map in which, by signs of his own composing, he would be able at a glance to get a fairly accurate notion of the population of any town in the district he was studying. And having done this he would be as forward, and only as forward, as the art of the cartographer ought to have made him without an effort on his part.

The distribution of population is one of the ultimate results of our civilisation. If the student received little help in setting that question in a fair and striking light, still less did he receive with respect to the distribution of hill, valley, and plain, which are such important factors in determining the cause of it. Whether we consider geography from the historical, the commercial, the geological, or the ethnographic point of view, few things are of more importance than knowledge of the contour of a country. Contour largely determines climate and productions; it illustrates geology, and helps to interpret history. It was the hills of Wales, of Devon and Cornwall, of

Cumberland and of Scotland, that saved the remnant of the Celts from the sword of the Saxon; and that, possibly, less on account of the difficulty they presented to an invader than to the comparative worthlessness of the conquest when effected. The fertile valleys were worth fighting for, from a commercial point of view; the naked hills could yield little to men who lived principally by agriculture; and so the very poverty of the hills became an element of strength to the race who had been driven to inhabit them.

How little help the student has received with respect to both contour and population nearly all maps bear eloquent testimony. There cannot be two opinions as to the marvellous accuracy and finish of our own Ordnance Survey. As specimens of cartography the maps are almost unapproachable. But even these fail largely to give a true idea of relative height. And this is an unavoidable defect where only hair shading is employed.

In reference to this phase of cartography it must be confessed that the Germans and French are showing us the way, and that we are only beginning to move in it. Even the best German maps, however, do but indicate what art can and ought to do for geography. As far as possible a map ought to be a picture as well as a plan, and its value to the student will be in proportion to its success in realising this ideal. It is mpossible, however, with a few tints to give an adequate representation of the contour of a country, and every additional tint unfortunately adds to the cost of the map.

Economy, however, is tested not only by the cost of production but by the value of the article produced; and if we aim at making geography interesting, or the teaching of it effective, we must be prepared to pay a fair price for the article we demand.

The ordinary map, teaching very little as to contour, is radically defective; the mental picture that the student acquires from it is confused and imperfect; and if he should be a teacher the picture he produces for the benefit of his class is necessarily an imperfect representation of a faulty study.

In the interests, then, of economy, *i.e.*, of *thoroughness*, the contour map becomes an article of prime necessity in teaching geography.

The modern notion with respect to the teaching of geography is that the child should first be taught to understand that with which it is closest in contact, and from that pass on to that which is more distant. This is exactly opposite to the older ideal. In fact, local geography is as distinctly a modern invention as Hypnotism or the Phonograph; our ancestors apparently believing that knowledge of one's immediate neighbourhood would, as honest Dogberry says of reading and writing, "come by nature." How ludicrously wide of the truth this notion was, any one who will take the trouble to test even a sharp child on the point may speedily convince himself.

The contour map of Huddersfield and district is an honest attempt to make local geography plain, interesting, and useful, and if it requires much explanation on the part of the teacher it has failed of its purpose. Primarily it is intended for use in schools, and to that end all aims have been made subservient. But it will be found equally useful in the office and in the library. All towns and villages, and nearly all hamlets in the district, are marked upon it, and the relative importance of each, with respect to population, is shown by circles of proportionate area. In a few cases, where the population of one place is included in that of another, *e.g.*, of Quarmby, near Huddersfield, the position of the former is indicated by a + only, its population going to swell that of its larger neighbour. The method of representing towns by means of circles of proportionate areas is a somewhat new departure in cartography, and one that is believed will add greatly to the usefulness of the map.

Not only are the names and positions of towns, &c., given, but the roads which link them to each other are represented with a fulness not often attempted in similar maps. This feature may possibly commend it to the attention of the ever-increasing army of cyclists.

The map represents a wide and interesting district, since it gives a section of the country right across the Pennine chain, and shows the contour from a level of 100ft. above sea-level in the valleys of the Aire and Calder on the east, and of the Mersey on the west, to a height of 1,909ft. in Black Hill, south-west of Meltham, and almost midway between the lowest levels on each side.

The first contour tint employed represents land less than 100ft. above sea-level; the next, land less than 200ft.; and from this each successive tint, deepening in shade, shows an advance of 200ft., until the highest band, that representing land between 1,800ft. and 2,000ft. above sea-level, is reached.

The district embraced in the map stretches from Bury on the west, to Barnsley on the east, and from Burnley, Bradford, and Leeds on the north to Manchester on the south. It is a district of nearly seven hundred square miles in extent, and the combination of bold natural features in close proximity to the great centres of population on each side of the Pennines which it presents gives it an interest that no other part of England can excel. The great hill-masses stand out with remarkable clearness, and the narrow valley between Todmorden and Littleborough—a valley into which road, river, canal, and railway are crowded—is also remarkable. So, equally, are the few roads which, in the age preceding that of the iron-horse, served as the only means of communication between Yorkshire and Lancashire. Noticeable among these will be:—

1. The Long Causeway between Halifax and Burnley.

2. The long, dreary road from Holmfirth to Oldham, across Saddleworth Moor. This road rises upwards of 1,600ft. above sea-level.

Perched up among the hills will be noticed the reservoirs, those at Woodhead just putting in an appearance to the south of the map.

The use of contour tints will be found helpful in teaching the river systems to the lower standards of our schools; and Calderhead (758ft. above sea-level), the source of the two Calders—of the Yorkshire Calder, flowing east through Todmorden and Wakefield, and of the Lancashire Calder, flowing west through Burnley—will afford a sufficiently striking example of a watershed. About a mile west from Calderhead is Thieveley Pike, the source of the river Irwell.

The railway system forms a special feature in the map. All railways are inserted. All stations will be found marked on them, and the distance in miles from Huddersfield will be found (where practicable) correctly marked on them.

The canals receive due attention. The most remarkable of them is the Huddersfield Canal between Marsden and Mossley, which for three miles and a half runs through the Standedge Tunnel, side by side with the London and North-Western Railway, both of them emerging into daylight at Diggle.

The map is a reduction from the six-inch Ordnance Survey, and the scale employed is that of two inches to the mile. About two-thirds of the area represented belongs to Yorkshire; nearly all the remainder belongs to Lancashire; a fraction is occupied by Cheshire, and a still smaller fraction by Derbyshire.

THE TRANSVAAL: ITS HISTORY, GEOGRAPHY, MINERAL WEALTH, AND PROGRESS.*

By W. Y. CAMPBELL, Hon. Vice-President of the Witwatersrandt Chamber of Mines.

[Addressed to the Members, in the Memorial Hall, Friday, May 16th, 1890.]

WHEN I was honoured by a request from the Council of the Society to address you upon "The Transvaal," I felt that a better and more fitting choice could have been made: my suggestion to this effect, however, was in vain, and therefore it is I claim your indulgent hearing, while I tell you what I can in the limit of time respecting the land of my adoption, based on over twenty years' residence there.

The Imperial Macaulay of fifty years hence will doubtless call special attention to the phenomenal African craze now existing in the world. During the first three-fourths of the nineteenth century, America, India, and Australasia have occupied all the attention England or Europe had to spare for matters abroad. Africa remained a sealed volume, the contents of which were but vaguely or traditionally known to a few. In fact, a few years back the average European's knowledge of Africa might be summed up in Dean Swift's words, written over a hundred years ago—

> So geographers in Afric maps
> With savage pictures fill their gaps,
> And o'er uninhabitable downs
> Place elephants instead of towns.

Now, however, within a few years, and like the twinkling of an eye, all this has been changed. The mists of distance, of doubt, and of ignorance, which have for centuries veiled Africa, are rolling away for ever, and with a dazzling rapidity which finds its greatest development in that portion of the Dark Continent lying between the Cape Peninsula and the Zambesi River. It is but three months ago that Mr. Stanley went north on a lecturing tour, reviling the British Government for its apathy about the English heritage in Africa, and in the very midst his taunts were turned to laudation, his sneers to congratulation over the Anglo-German agreement. This has been followed in turns by Anglo-French, Anglo-Boer, Anglo-Portuguese, and Anglo-Italian African conventions, and from the Pillars of Hercules to Cape Agulhas Africa has been parcelled out by the great powers of Europe. The vast continent has been sliced and partitioned with the facility of cake cutting, and in a manner for which nor history nor legend has any parallel. Nay, the British Empire in Europe has been shorn of Heligoland with the sole intent of extending the British Empire in Africa. This change of feeling towards Africa, and specially to the congery of states and colonies which make up South Africa, is traceable to several causes; but almost chief cause of all has been the mines and minerals of South Africa. A few years back and the home-residing Briton's view of South Africa was chiefly associated with such disastrous words as Sandhlwana and Majuba; but not so now—these are already the facts of buried history. The current attention-commanding facts are, that within the past twenty years South Africa has shipped over fifty millions sterling worth of diamonds to England, and within the last three and a half years the Transvaal from its one field of Witwatersrandt alone has shipped to England virgin gold totalling close upon four millions sterling. Those figures, when taken in connection with time and place, constitute Imperial facts, and will as such bear and deserve your close analysis.

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* The address given to the Members by Mr. Campbell has been added to and revised to date.

"The true wealth is that of the soil" is the gospel of political economy. Poets of all time have sung the jocundity of corn and wine, and when poets and political economists affirm a principle in mutual accord it is hardly for us to differ. At the same time, in these later days of the nineteenth century, and in face of the new needs of mankind, we can fearlessly submit that whilst blessed is the land of corn and wine, yet twice blessed is the land which adds to corn and wine an abundance of precious and useful minerals. California is, and Australia is peculiarly a land flowing with milk and honey and rich in stores of wheat and wine, and yet where would the development of those natural treasures be now but for the golden elixir discovered in the Sacramento canons and the plains of Ballarat? By virtue of their superadded mineral wealth, America and Australia have, during a mere half-century, sprung forward and front the world as nations to be reckoned with in the making of the world. In like manner, and reading the what-will-be of the future by the what-has-been of the past, it is not difficult for us to image the wondrous development South Africa is just on the brink of; its natural limits of expansion and growth we may not set, but the proven facts facing us from all parts of South Africa indicate clearly an industrial development during the current decade which history will find it difficult to parallel.

Turning our attention to the mineral resources of South Africa, and commencing with the parent colony, that of the Cape, I will deal first with the Cape copper industry, which has its head-quarters on the Atlantic coast in Namaqualand. The copper is found in veins, the ore yielding some 30 per cent. of copper. The country about the mines is arid in the last degree, and the geology of the district shows gneiss predominating with intrusions of granites and greenstones.

The discovery of copper there is now a matter of two hundred years ago; but it was not until 1860 that a company was formed to work the deposits, and during the subsequent thirty years to date some 400,000 tons of ore have been sent to England, valued at eight and a half millions sterling. Turning from the useful copper, we may refer to the diamond industry of the Cape Colony, an industry which had no existence in 1866, but which has since turned out and shipped to England, as I have said, diamonds to a total value of over fifty millions sterling. The present production is on a three to four millions sterling basis yearly, and this figure can be lowered or raised at will of the company. So far, these diamonds have been found in "throats," as geologists class the peculiar "pipes" or "chimneys" in which those diamonds have been found. Outside those known throats, diamonds are found on the banks of the contiguous large rivers, and the assumption is well justified that the beds of those rivers, were it practicable to divert their streams, would yield as many gems as have been won from the mines proper. The best of the mines have been amalgamated and are now known as De Beers Consolidated. The belief of this company is that they have, by means of this amalgamation, secured the monopoly of the world's diamond market and supreme control of the output. Such is the hope of the company and of the De Beers shareholders; but I know of no geological reason why similar throats, equally rich, may not be discovered any day in the same district of Griqualand West, or neighbourhood where similar formations exist. Turning our attention to the coal fields of the Cape Colony, we have it, thanks to the prospecting energy of the Government and the scientific zeal of the well-known geologist, Mr. Dunn, that the coal measures of South Africa are found in the Colony at several points, and partially worked at Indwe and Stormbergen. Unfortunately the energy of prospecting has not been followed up by a development in mining the coal measures calculated to supply the Colony's needs, and do away with the necessity of importing from England, and appearances indicate that unless some more active policy of utilising their coal resources is pursued, energetic little Natal will become the coal supplier of the parent Colony as well as the fleets of the world calling at South African ports. Manganese ore, yielding 70 to 90 per cent., is reported plentiful in the Cape Peninsula. Crocidolite, an asbestiform and very pretty mineral, is plentifully found in the Colony, and, like the Scottish pebbles and caingorms, is in considerable demand.

Turning to Natal, we find there magnificent resources of coal, the northern angle of the Colony being one large coal field, and which at several points is being actively developed, and also already placed in connection by rail with the seaport of Durban. The coal is of specially good quality, and in seams of a size well calculated to facilitate economical working. The most cursory view of the extent of Natal's coal wealth, and of the geographical position of her port, indicates clearly that Durban should, within the current lustrum, become an important Imperial and commercial coaling station. Iron and limestone deposits of value are reported, but not yet proved. Gold has been found at several points, but the Natal gold industry is nowhere near the output stage yet. Asbestos is being found at several points, but so far only of poor quality; but even disallowing Natal the possession of any mineral wealth save her coal, in that coal and in her position she has a source of wealth it would be impossible to estimate the value of, alike to herself, to South Africa, and the Empire.

Surmounting the great Drakensberg range from Natal, we emerge on the rolling plateau of the Orange Free State, the mines and minerals of which are still *in futuro*, not because there are none, but, with the exception of the coal deposits in one part, and diamonds in another, very little has yet been done in the way of prospecting. The State is a large one, and thinly inhabited, and there are no known indications of rich auriferous deposits to attract the adventurers of the world yet. Petroleum is reported as discovered, but whether it occurs in commercial quantity or only in fragmentary distillations has yet to be proved; in any case the indications are worth the use of boreholes for prospecting. Gold is found in several parts of the state, but when the ore vehicle is in quantity the mineralisation is poor, and where the gold is rich it is in disconnected, unreliable stringers. What gold deposits may yet be found as prospecting goes forward we cannot determine; but for the present the proven minerals of the Free State may be summed up in diamonds and coal, in themselves no mean natural heritage.

Swazieland demands a passing attention. The gold bearers in that country are quartz reefs, which in the main are low grade, with, however, at places very good rock indeed. Much, however, requires to be done before Swazieland can be described as rich in minerals.

Turning our eyes seawards once more, we have on our left the native States of Zululand and Tongaland, and on our right Basuto and Pondo Lands. Mineral wealth in all are credibly rumoured, but save in Zululand, where auriferous quartz reefs are being worked by Natal colonial capital, little is known. Northwards, again, lies that vast tract of country, stretching from ocean to ocean, and bounded on the north by the great Zambesi River: Gazaland, Mashonaland, Matabeleland, Khamaland, Moremiland, and Bechuanaland. A glance at those countries, coupled with the flitting, intermittent evidence, which during a twenty years' residence in South Africa one necessarily accumulates, I am forced to the conclusion that great as has been the wealth of Kimberley and of Witwatersrandt, in those northern territories from which, for the first time, the veil is being lifted, there are even greater riches to be laid bare, and to command the attention of Europe. America has had its gold rush, and Australia likewise; the South African rush is yet to come. It came in America and in Australia with the alluvial, and it will likewise come in South Africa with alluvial. So far as discovery has gone, rich alluvial for the individual digger has not yet been discovered in the older states of South Africa; but it is practically certain that in the new territories now being opened by British pluck and British money will be disclosed as rich Pactolian streams as those which turned villages into cities and provinces into nations in other parts within the memory of living men. One deep and important regret may be mentioned in this connection; and that is, that the rich territory of Gazaland has been gratuitously offered to Portugal by England, despite the fact that the king and people of that territory refuse to have anything to do with the Portuguese, their natural enemies, and clamour for alliance and friendship with England, despite the fact that the territory is one which by sphere of influence belongs to South Africa, and which will yet, despite Imperial political shortsightedness, revert to South Africa. Gazaland is undoubtedly rich in alluvial gold, discovery is moving apace, and once facts are fully known, that mildew on our fair South African littoral, the Portuguese, will vanish before the stress of civilisation, resulting on the coming rush of miners and explorers. I would ask you now to revert with me to the Transvaal Republic and its minerals and mines. I will deal with the gold industry first, and with the leading section of it, namely, the Witwatersrandt Gold Fields.

Witwatersrandt is the district containing the now famous Main Reef line, *i.e.*, several distinct layers or seams of auriferous conglomerate, varying in thickness from 3 inches to 20 feet, and in richness from 1 dwt. to 60 oz. to the ton, but averaging about 2½ feet thick, and yielding 12 to 15 dwt. per ton. The seams dip south, at an average angle of about 40°, and the beds of ore can be traced on the surface for some fifty miles, running mainly and continuously east and west. The depth of the seams is unknown; it has been proved to be over 600 feet, and from the geological indications a mile deep will not bottom them. The Witwatersrandt gold industry is, therefore, based on several 2½ feet seams of gold-bearing matter going a mile deep, and running fifty miles east and west; thus the gold contents and tonnage of gold ore is illimitable, and quite beyond the treatment of this generation. The gold won to date has been from surface and next to surface mining, and the seams are practically untouched.

The obvious richness of the Witwatersrandt deposits created last year a mad spell of speculation, which disorganised things very much and created many temporary evils. You in England lost your heads. We on the spot were every whit as bad. Auri Sacri Fames became a raging fever on both sides of the water, but I believe the worst sufferers were the people of Johannesburg themselves. The very richness of the deposits not only led to speculative calculations taking precedence of industrial figures and natural contingencies and obstacles, but afforded a splendid field, especially in London, for the emission of nominal gold-mining companies, in reality arrant swindles—in fact, the richer our ore deposits were the greater and more brazen the concurrent frauds. Even the good properties were strangled in their birth frequently by the grossest mismanagement which dogmatic inexperience or malice intent could compass; but all this is righting itself by a natural reaction, and the ups and downs of the markets and the history of individual ill-conducted mining companies in no way affect the true industrial merits of the fields. The fields have passed triumphantly from the prospecting test, and are now ready for development and gold mining on an assured basis. Reference has been made to the earnest already given and being given by the Witwatersrandt fields of present riches and of riches yet to be. The following figures tell their own tale, being the certified production of raw gold from the one field alone during the understated periods in ounces, the gold being worth on sale £3 15s. per ounce :—

For the whole year	1887		1888		1889		1890
Ounces	34,897	...	230,917	...	379,733	...	—
For the first quarter of	1887		1888		1889		1890
Ounces	5,000	...	38,137	...	78,861	...	109,524
For the second quarter of	1887		1888		1889		1890
Ounces	10,000	...	51,183	...	94,766	...	115,425
For the first half-year of	1887		1888		1889		1890
Ounces	15,000	...	89,320	...	173,627	...	224,949

	1887	1888	1889	1890	Total to Date.
January	No Monthly Totals Recorded.	11,269	24,986	35,038	
February...........................		12,162	25,800	36,886	
March		14,706	28,075	37,600	
April		15,853	27,136	38,799	
May................................		19,002	36,298	38,884	
June		16,328	31,272	37,412	
July...............................		19,966	32,407	39,452	
August		19,877	32,142	42,861	
September		20,495	34,369	45,467	
October		27,775	31,914	—	
November		27,836	36,116	—	
December		26,148	39,218	—	
Ounces, Total...............	34,897	230,917	379,733	352,399	997,946 oz.

Total output for the three and half years being almost 1,000,000 oz. of gold, realising close upon £4,000,000. In 1885 the Witwatersrandt area was uninhabited, with neither a building, a mine, nor a battery. The place was practically in the wilds—some 500 miles from any seaport. There is now the nucleus of an enormous industry, and one large well-built town of some 40,000 inhabitants, and several smaller towns. All the food-stuffs and mining material had to be brought to the spot by ox teams at extravagant prices, and the gold that has been won has, till recently, owing to the non-mining class of people who owned and run the mines, cost practically as much as it realised. Railway facilities, added to expert mining, are reducing cost of production 50 per cent., and expert metallurgy is increasing percentage of gold saved by 25 per cent. Those two factors together make for a development within the next few years which will astonish the gold-consuming world. In conning these figures their true merit and value as indicators lie in the fact that the figures apply to the one gold field of Witwatersrandt alone, and which was unknown as a gold field till 1886-7 and is quite apart from the output of the other gold fields, viz., De Kaap, Malmani, Zoutpansberg, Klerksdorp, Komati, Vaal River, &c. The merit—phenomenal merit—of these figures also will be best found by contrasting them with the results being obtained in other countries, say such old gold-producing territories as the United States of America, after a century of development; Australia, after half a century of development; and Russia, after hundreds of years of working—then it will be seen that the young and barely scratched Witwatersrandt field is rapidly overtaking those countries, and in no case is the Rand output beaten by any other single field in the world. The deduction made, the contention urged, is that with such prospects of gold output, the rapid development of the State from its recent primitive Boer pioneer settlement status to that of a full-pulsed, prosperous, busy, and populous territory is assured.

To those seeking further corroboration of the facts stated, than is supplied by the steady progressive figures of output, it will be found in the expert reports of the many known professional geologists and mining engineers who have specially visited the fields and reported on them. They all, without reservation, state that it is the greatest gold field in the world.

This greatest gold field has so far only given an inkling of its enormous future; but its position in the world's markets five years hence and now are as different as infancy is from fuller growth. In that time the population and industries dependent on it will have increased many-fold, and for the sole reason of the immense and permanent deposits of gold-bearing matter, which will cost 5 to 7 dwt. to extract 8 to 15 dwt. of gold for every ton of that matter. A dwt. of gold is worth 3s. 9d. A fifty-stamp mill can treat three tons per stamp per day, or 45,000 tons per annum of twelve twenty-five day months. The average nett profit per ton, when ordinary business prudence and economy is practised in mining and milling, is four dwt. or 15s. per ton. My figures are not only attainable but have been attained and are being surpassed. In face of such figures and in face of the illimitable, absolutely illimitable, tonnage of 8, 10, 12 and 15 dwt. rock at Witwatersrandt, can the remotest shadow of a doubt be entertained as to the future of our gold industry there? That industry cares not for size of capital or market riggings—those are but the parasites on a body with an inherent vitality superior to all attacks.

The railway mileage and tariff to Johannesburg when open show a freight charge of £8 per ton from the seaport. At present it averages about £30 per ton by ox wagons, and the saving on the amount actually carried to Johannesburg last year would have been £1,600,000 had the railway and not the ox wagons done the carrying. About the end of April, 1891, the Natal line will be over the Drakensburg, at the Charleston terminus, on the Transvaal plateau, with only 150 miles of level country to be laid with rails to Witwatersrandt. When the railway is completed to Charleston a very large saving in cost of all things will take place in the Transvaal; and when the railway reaches Witwatersrandt the cost of mining should not be more than 50 per cent. of present rates, if so much.

Fuel, luckily, we have in abundance, the coal seams in parts overlying the auriferous conglomerate seams. The bulk of the coal is found at the eastern end of the main reef line, and a mineral steam tramway has been constructed and runs due west along the line of reef from the coalfields, yielding thereby coal at cheap carriage and at all times. This in itself is a distinct gain.

Water for ore dressing is a mere matter of adequate conservation, and the Main Reef Company, which fails for want of water, must blame either lack of funds or lack of forethought. Water is no difficulty at Witwatersrandt.

Tenure of gold claims is now on a more assured basis, thanks alike to the energy and persistent efforts of the Chamber of Mines and to the loyal hearing given to the Chamber by the Executive Government of the Republic. Titles may be impeached, but only owing to laches of the *quasi* owners, in the same way as titles are impeached anywhere, even in England, for due cause.

The climate you cannot better over seven-eighths of the State, and at Witwatersrandt, 6,000 feet above sea level, it is bracing, tonic, and healthy in every sense.

I have told you of the incubus on the industry caused by the want of railway communication; but there are several things the gold-mining industry suffers from which practically mean a further incubus on the industry, and with which we have been struggling and hope to come out triumphantly. One of these incubi has been taxation. The industry has been chiefly conducted with British capital in a foreign State, and between the governed of that State and the Government for a short time existed a state of things which was productive of antagonism and not of sympathy, which found unwitting expression in inequitable taxation upon the gold industry. A reference to the published figures of the Witwatersrandt Chamber of Mines shows that the gold industry of the Transvaal has been paying 50 per cent. of the total revenue. Just think what it would mean if the owners of the Welsh mines, or of the coal mines, had to pay one-half of their revenue to the Crown, or to the owner of the land on which they are situate, and out of the remaining half had to pay the cost of working and find a profit. But the gold industry was not to be put down, even by these terms and conditions, and after paying some 50 per cent. to the Government and the other heavy expenses to which I have alluded, it has proved itself the master of the situation and has struggled on. That antagonism which has been shown to the gold industry, the very industry that raised the State from bankruptcy to prosperity, has died out. Governing and governed are now no longer strangers, a rapid change has set in, and the Government is now anxious to work for and with the mining communities, and have also admitted those communities to a partial say in the Government itself, by yielding or granting a right to elect to and sit in a lower House of Legislature. That right will be exercised in the next year, and one of the first uses to which that right will be put will inevitably be the equitable equalisation of the contribution made by the gold-mining industry to the general revenue of the State. Another incubus from which the gold-mining industry suffered was the inexperience of those connected with the early management of the mines. In England, when any new form of work is started you have the whole world of capital and science with you and a railway in touch. In South Africa it is not so; you have some 500 miles of roads across which machinery has to be dragged, after it has been brought across the water; and then when we commenced crushing we found we had to pay disproportionate wages to often incompetent men, but, despite all, we have increased the output month by month. I have also referred to the question of metallurgy, and on this question I hope to hear some remarks from a gentleman most qualified to speak upon it. The extraction of gold from free ore is quite simple, and no chemical process is required, and yet we find that we really don't catch more than 50 per cent. of it; but the mechanical processes for catching it are in a high state of perfection elsewhere, and in some of the American States they catch 75 and 85 per cent., or 25 and 30 per cent. of the gold which in the Transvaal now goes away in the slimes. Possibly there are two classes of humanity in this room—those who have no gold shares, and shareholders in gold companies who have bought Transvaal shares at £5 and suddenly found them worth 5s. The first class can plume themselves on their immunity, the second class are enriched by experience often won too late; still, I fear that inquiry would discover that, in buying shares, they did not expend a tithe of the caution they usually exercise, say, in ordering a hat or choosing a necktie. I can assure the latter of my sympathy, and I can further assure them that had they used ordinary discretion they would not have had to taste that bitter cup. If they had first found out something about the mine, whether it was properly worked, and what chance there was of recovering the money, they would not be in the position they are in now. You may some of you have spent your money on absolutely worthless mines, and have only got worthless coloured paper; but because you find you have only got that paper, don't blackguard the true industry, but blackguard your own indiscretion in not picking proper mines in which to invest your money. The wages paid, too, are necessarily high, and when they are reduced—and action is being taken to reduce them—it will bring the whole thing to a proper industrial level. The Chamber of Mines are taking steps to reduce the wages of the native labourers to at most 10s. per week, and when that is brought about further improvements will be introduced, and the number of labourers in the best-managed mines will be reduced from 50 to 60 per cent. by the introduction of labour-saving and power machines, and instead of the native labourer fiddling his puny muscles at the work, we shall do the work in half the time and at half the cost by simply adopting the best methods of mining and the best class of proved machinery.

Now, as to the question of the Main Reef line, as some of you are doubtless aware, and as you will see at a glance if you look at this sketch (pointing to a plan at his side), you will see at once that the reefs which have been worked are a series of auriferous conglomerates, and the theory is that that part of the country has been at some time under water, and a conglomerate and sandstone series been formed, divided into various separate layers; but now, instead of lying flat, it is, owing to upheaval, in some parts tilted almost vertical, and at others at an angle of 10 or 15 degrees, affording facilities for economical work, and is altogether different from the quartz reefs worked in other parts of the world. What is usually done is to sink a vertical shaft and cut the reef, and when each reef is cut to drive along from east to west, and stope out the reef above. Whether it would not be better to deal with the reef from the beginning on the incline, and not by putting down a vertical shaft at all, is at the Rand a vexed and an open question.

I don't think I need say anything more about the Witwatersrandt fields. I have told you that you have 50 or 60 miles of reef to work, running east and west, each some 2 or 3 feet thick, going down to an unknown depth, and if you simply take the cubical contents and find out the total tonnage, you will be astonished at the figures, and taking the yield of gold at 12 dwt. per ton, and the cost of working at 20s. to 30s. per ton, and you have ample margin for profit. You may ask, why do not such and such shares go up? I am not concerned with the capital of companies. The market settles that. You also ask, where then are the dividends? I reply, you are unreasonable. You don't draw rent while your house is building. Your coal and iron mines here in England did not pay dividends three years from turning the first sod of the industry. What concerns us is the yield from the gold mines, the yield from each ton of rock, and that it leaves a profit margin on working, and this or that failure does not affect the industrial aspect of the mine values.

Leaving Witwatersrandt we will look now at the other gold fields. There are the De Kaap Gold Fields, which are in quite a different formation—*i.e.*, the gold is in quartz reefs. The district contains many splendid mining properties; but the district being mountainous, communications have to be perfected before the known wealth can profitably be dealt with on a large scale. Railway communication is now being established, and under two years from now there should be a consequent heavy revival in the mining industry at De Kaap. The De Kaap fields produced during last year 35,000 oz., and things have been stagnant there; but next year there should be an output which undoubtedly will bring that district back to your minds again.

Malmani, Zoutpansberg, Vaal River, Lydenburg, and other gold centres are barely prospected yet, but proofs are abundant and clear that in some of these places the gold deposits are strong enough to create, in time, new towns, and occupy a very large amount of people and capital.

The Klerksdorp fields are a repetition of the Main Reef features—*i.e.*, immense deposits of gold-bearing conglomerate, with the difference, however, that little as has been done at Witwatersrandt, much less has been done at Klerksdorp, and, whatever you may have heard as to one mine, that does not condemn the district. The failure of one mine does not condemn the district, and there are many properties which it will not pay to work with the present rates of carriage; but so soon as you get railways there—which will be at no very distant date—these mines can be placed on a solid, industrial, and payable basis.

I have referred you first to gold, and next in order comes coal. In the Transvaal you have some 10,000 square miles of solid coal fields, and that is a pretty good heritage even for a country without gold at all, and on these coal fields you have at times coal coming out of the same shaft as the gold; and in the same country you have abundance of ironstone and limestone for your flux, and you have all the elements that go to make up a very large iron industry, and in the future that ironstone will be of great value, but at present it is practically worthless because we have no means of communication. But railways are advancing and will soon intersect the country, and then you will have an industry that will take its place amongst the other industries of the country. Then there is argentiferous copper, principally proved at the Willows Argentiferous Company, in the Pretoria district, and, although they have not paid a dividend, it looks like steady dividends soon. It is simply a question of time, working, and of machinery. You cannot go and peg out your claims to-day and pay a dividend to-morrow; but silver augurs to become a great industry in the near future of the Transvaal.

Behind all this mining wealth you have the back country which will grow corn and provide cattle for a vast population of Europeans. The Boers were by stress of events a primitive, almost nomadic race, and have not been accustomed to grow more than was needed to meet their own requirements, and who have gradually, through stress of circumstances, withdrawn from agriculture, there being no markets till now, but the land is there waiting for cultivation, and the Transvaal will yet be a great producing country, outside its one great industry of to-day. My hope is that a great deal will be done in the way of agriculture. The gold will command a population, that population will require to be fed, and therefore, the gold fields and agriculture will go on prospering together, and you will have at once cause and effect there.

A word as to the population of the Transvaal of to-day. In the year 1882, when England in her wisdom restored the country to the Boers, you would have found the population 5,000 English, 50,000 Boers, and somewhere about half a million natives. To-day, it is about 60,000 English, 50,000 Boers, and still about half a million of natives. If you had gone there then you would have found the greatest bitterness existing, a feeling of humiliation amongst the so-called loyals, and a sense of bitterness amongst the Boers, coupled with a feeling of triumph. This has disappeared. It was to a large extent owing to the bureaucratic form of government which you employ here in England in dealing with your distant colonies, and to the absence of that better class Civil Service which in some other parts of the world pays special attention to the wants of the people. If you go there now you will find all that changed, and that the Boer finds that the Englishman is a human being who comes there intent on business. I must leave to your individual imaginings what the future will be. You have seen its wealth in minerals, and for agricultural purposes; you have seen the influx of population rushing to that country; and you can come to but one conclusion as to what such a country, already important, will be in 20, 30, or 40 years to come. I cannot read the future, or say what is in store for that great country lying north; but I am of opinion—and it is derived from a good deal of observation—that there will be enormous discoveries of alluvial in that part of South Africa, and especially in Gazaland, and wherever there is alluvial a rush follows, and in that case what has been written of the wondrous transformation scenes, rapid progress, and immense development of other countries may be written again of South Africa, and during the current decade. With these remarks I leave the subject.

REVIEW.

Sella, V. and Vallino, D.—Monte Rosa e Gressoney. Oblong 4to, 59 pp., illustrations. [Mr. J. Scott Keltie, in "Proceedings of the Royal Geographical Society."]

Signor Vittorio Sella has, in conjunction with Dr. Vallino, found time between two summers in the Caucasus to illustrate one of the most interesting of the valleys of the Italian Alps. Gressoney lies south of Monte Rosa, and its stream, the Lys, falls into the Dora Baltea near the lower end of the Valle d'Aosta.

The romantic scenery of the lower gorges, the pastoral charms of the upland meadows of the Val de Lys, are little known to the herd of holiday-makers; but they have attracted the better sort of Alpine travellers, from De Saussure and the Rev. W. S. King, the author of "The Italian Valleys of the Pennine Alps," to Robert Browning and "Margarita di Savoja, Regina d'Italia," who last year emulated De Saussure in passing three nights on the summit of the St. Theodul Pass and climbing the Breithorn.

The peculiar interest of these southern valleys of Monte Rosa to the geographer is the illustration they afford of the relations between topography and history. Their upper basins are inhabited by a population speaking an archaic German patois, who have up to the present day kept their local dialect, and costume, and usages intact, and have had their principal relations, not with Piedmont, but with Teutonic Switzerland and Germany. Thanks to the researches of some foreign students and of the Rev. W. A. B. Coolidge in this country, we shall soon be in a position to trace exactly the date and circumstances under which these colonies moved across the Alps—as the Ossetes moved across the Caucasus. We shall be able to realise the time when Zermatt was nothing but a summer station of flocks, and when the Saasthal was known as the Martinswald and was without permanent habitations. In gaining this new knowledge we must make up our minds to give up one picturesque legend—that of the establishment at Saas of a colony of the Saracenic freebooters, who infested the Great St. Bernard in the tenth century.

The authors of this volume point out that the construction of a railway in the Valle d'Aosta, and of a carriage road in the Val de Lys, must lead to the gradual disappearance of most of the local peculiarities of Gressoney, as well as of the northern connection of its population. They have therefore done their best to supply a trustworthy record of these features by a series of photographs and a suitable descriptive text, accompanied by specimens of the local dialect. The name Gressoney itself comes, they assert, from Kressen-au, the Cress-Meadow. They also furnish a topographical description of the crest of the Monte Rosa chain. The derivation of the name from Roesa, Val d'Aostan patois for glacier, has now been fully established. Up to 1840, writes Dr. Vallino, none of the summits of the group had separate names. Without endorsing the exact date, the statement is substantially correct; and it was a consequence that the name Dufour Spitze was applied to the loftiest summit by the Federal Staff, just as Mount Everest has been so named by the Indian Survey. The local name of the mountain has, however, in the case of Monte Rosa, remained that by which it is known to geographers.

Photography can hardly surpass in brilliant representation of nature Signor Sella's view of the ice-capped crags of the Lyskamm, with Mont Blanc floating in the air above its top, as seen from one of the peaks of Monte Rosa; and there are many views which illustrate, with a success that is altogether exceptional, the high mountain platforms—

"Where the white mists, for ever,
Are spread and upfurl'd—
In the stir of the forces
Whence issued the world."

PROCEEDINGS OF THE SOCIETY

FROM APRIL 1st TO JUNE 30th, 1890.

HUNDRED AND TWENTY-FOURTH MEETING

Of the Society, held in the Memorial Hall, Wednesday, April 2, 1890, at 7-30 p.m., Mr. Mark Stirrup, F.G.S., in the chair.

Mr. W. D. Pitcairn, F.R.G.S., addressed the members on "British New Guinea: its Geography, and the Manners and Customs of the Natives." (See p. 49.) The address was illustrated with a map, drawn by the Victorians, and collections of native work and curiosities, lent by Mr. G. C. Yates, F.C.S., and Miss Leech.

A hearty vote of thanks was given to Mr. Pitcairn, Miss Leech, and Mr. Yates, for the address and illustrations, to which Mr. Pitcairn responded, and replied to several questions.

A vote of thanks to the Chairman closed the meeting.

HUNDRED AND TWENTY-FIFTH MEETING

Of the Society, held in the Memorial Hall, on Tuesday, April 15, 1890, at 7-30 p.m., Professor T. H. Core, M.A., in the chair.

Mr. F. D. King, of Holy Trinity Schools, Bradford, Yorkshire, exhibited some sheets of a large map he is preparing for the teaching of the local geography of the West Riding of Yorkshire and part of East Lancashire, and several maps of Yorkshire, and addressed the members on "The Teaching of Local Geography." (See p. 82.)

The Rev. L. C. Casartelli, M.A., Ph.D., read a paper on "A People's Intuitive Museum for Brussels."

Mr. F. Zimmern gave some notes of travel to Delhi and back, which were illustrated by a number of lantern slides.

After considerable discussion, and very hearty votes of thanks to the readers of the papers, the meeting closed at a late hour.

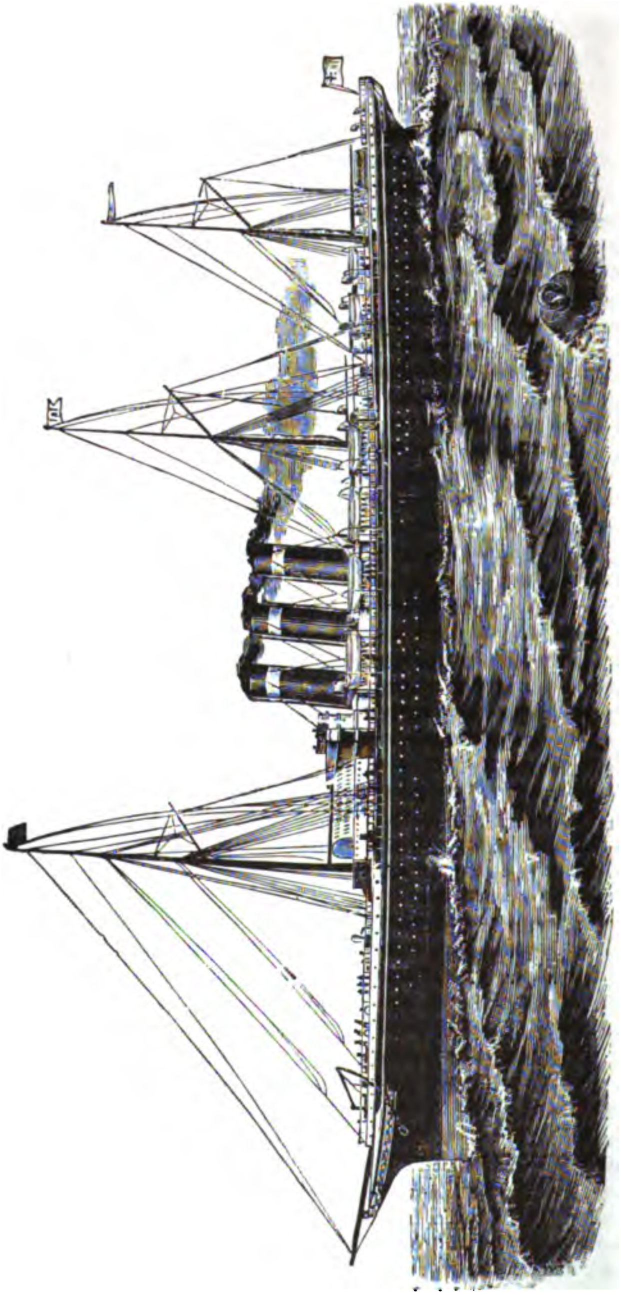
HUNDRED AND TWENTY-SIXTH MEETING

Of the Society, held in the dining-saloon of the s.s. City of New York, Saturday, April 26th, 1890, at 5 p.m., Mrs. Bosdin T. Leech in the chair.

About two hundred of the members paid a visit to the Inman and International liner, City of New York. The party left Victoria Station by 1-30 p.m. train for Liverpool, thence to the Landing Stage and across the Ferry to Seacombe, and the members were received on board the vessel, lying in the Alfred Dock, Birkenhead, by Mr. Edmund Taylor, chairman of the company, Mr. D. R. Calvert, their representative in Manchester (through whose kindness the visit was arranged), and Captain Watkins and his officers.

A short account of this steamship will be of interest to the members. We may say, at the outset, that the Inman and International Steamship Company Limited was formed on the dissolution of the Inman Steamship Company (after the death of Mr. Inman), and they now possess a fine fleet of steamers, sailings taking place every Wednesday from Liverpool to New York.

INMAN LINE.



Twin Screw Steamers—City of New York and City of Paris, each 10,500 Tons.

The City of New York is 10,500 tons gross tonnage, and, with the City of Paris, has the distinction of being the largest passenger vessel afloat. Her engine power is equal to 18,000 horse power, with a speed of twenty knots an hour. Built at Glasgow, she was launched on the 15th March, 1888, and christened by Lady Randolph Churchill. She is made of Siemens-Martin steel, constructed on the most approved principles of modern shipbuilding, and can be converted into an armed cruiser, if necessary, her promenade deck being specially strengthened and arranged to carry fourteen 5in. guns of the swivel breech-loading type. The vessel is practically unsinkable, being divided into fifteen water-tight compartments. Even if two or three of them filled the ship would not be placed in danger, and her buoyancy could easily be trimmed—a very happy assurance for the passengers who make use of her in crossing the ocean. She has double bottoms, so that should she ground she would not be affected to any extent by the flooding of the holds. In leaving New York or Liverpool this space may be filled with water, if necessary, to the extent of 1,600 tons of water in a few minutes, sinking the ship deeper into the water and giving the screws a better hold, rendering her steadier and less liable to roll. Equal care has been taken to provide means of rescue should any casualty happen. There are no less than thirty boats, capable of carrying all on board when in regular sailings. She has five decks, the topmost, called the promenade deck, extending from stem to stern. The captain's rooms are immediately below the bridge. The dining-saloon, said to be finer than the dining-hall in any hotel in Britain, is capable of seating nearly three hundred persons, with a capital organ. The artistic adornments are very chaste, its white framework of wood, set with delicately-stained glass, producing a feeling of immense space artfully and artistically limited. For first-class passengers there is a drawing-room and a library, the windows of which are of stained glass and inscribed with quotations from "Poems on the Sea," that contains 800 volumes in all departments of literature. Similar accommodation is provided for second-class passengers.

Among the mechanical appliances to be found on board are included a powerful search-light—similar to those fitted on warships—capable of reflecting a brilliant ray sufficiently clear to enable the operator to discern a small object a couple of miles away. This is used at night for finding the buoys on entering the channels at the end of a voyage. The whole of the vessel is lighted with electricity. She is driven by twin-screws, and her engines are duplicated to guard against the possibilities of a break-down. Her length is 560 feet, width 63 feet, and depth 43 feet. She made her maiden voyage across the Atlantic 1st August, 1888. The fastest passage ever made from Liverpool to New York was accomplished by her twin-sister, City of Paris, in 5 days 19 hours 18 minutes, while from New York to Liverpool the City of New York took 6 days 3 hours 18 minutes.

In conclusion, we hope this magnificent vessel may go on—

> "Triumphing, while still the smiles
> Of summer tremble on the water's breast,
> Thou shalt be greeted by a thousand isles
> In lone wild beauty drest."

After being shown round the vessel the party adjourned to the dining-saloon, where tea was served, after which the members held a meeting, presided over by Mrs. Bosdin T. Leech.

The Secretary (at Mrs. Leech's request) called upon Alderman Bailey, one of the promoters of the Ship Canal, to propose a vote of thanks to the gentlemen who had so hospitably entertained them, and observed that, although it might be a very long time before they would see a vessel like the City of New York coming up to Manchester, they hoped to see some steamers coming that way before long.

Alderman W. H. BAILEY, in moving a vote of thanks to the Inman and International Company, said Sancho Panza's opinion was that when a man got what he wanted he wanted nothing more, and if he wanted no more there was an end of the matter; but it was only doing justice to their feelings in putting heartily this vote of thanks especially to Mr. Taylor and to Captain Watkins, for the opportunity of forming some acquaintance with the internal arrangements of such a ship, and also for the hospitality extended to them. Something like one hundred years ago, Wilkinson, a Lancashire engineer, made the first iron boat; and that a ship like this they had seen to-day, of such mass and volume, could be propelled by its own force across the ocean was a greater triumph of human intellect than the ancient world ever dreamed of. They regarded every improvement in steamships as a benefit to the whole country, because it was a means of developing trade with the rest of the world. They regarded their sailors with just pride, feeling that in seamanship they were quite as brave and as bold as the Drakes, Hawkins, and Frobishers of three centuries ago, and as a splendid example before them they had only to recollect the ability—the cool skill and seamanship—shown by Captain Watkins, after the mishap to the City of Paris, to prove this. We, as members of the Manchester Geographical Society, could not do very much without ships, and the progress of civilisation owed much to the great influence of steam. He begged to move, "That the best thanks of this meeting be given to the gentlemen who had so heartily entertained them."

Councillor F. SMALLMAN seconded the motion, which was supported by County Councillor HIGHAM (of Accrington), Mr. W. BOTTOMLEY, J.P. (Stalybridge), and Mr. W. C. FREEMAN (of Leigh), who expressed the pleasure it had given him and his friends from Leigh to have had the opportunity afforded them of going over such a famous ship that afternoon. It had indeed been to them a rich treat, and the outing had been a thoroughly enjoyable one.

Captain WATKINS, in a brief speech, returned thanks for the kind words and kind wishes that had been mentioned by the various speakers, and expressed the pleasure it had given his officers and himself in taking them over the vessel.

A vote of thanks (moved by Mr. SHAW and seconded by Mr. BOWES) to Mrs. Leech for presiding brought this most enjoyable outing to a close.

COPE'S TOBACCO WORKS.

In the morning about twenty-five members visited Messrs. Cope's tobacco manufactory, and were very much interested to see the various processes of the manufacture of cigars, cigarettes, tobacco, and snuff from the leaf. The large number of females, looking happy and healthy, was remarkable. The members were very glad to have the opportunity of visiting these works, and were pleased with the courtesy of their reception.

HUNDRED AND TWENTY-SEVENTH MEETING

Of the Society, held in the Library, on Tuesday, April 29, 1890, at 7-30 p.m., Mr. B. O'CONNOR in the chair.

The election of the following members was announced:—

ORDINARY: Messrs. Councillor J. Brooks, J. N. Carter (in lieu of Mrs. Carter), William Cheetham, T. W. Foxcroft, Moritz Frank (in lieu of Associate), F. A. Frey, W. M. Greaves, J. D. Hague, C. J. Hurst, Robert Kirkpatrick, L. B. Lee, Councillor Wm. Lees (mayor of Stockport), J. L. Leigh, Jos. Lieben, W. C. Lord, John Norris, John Pearson, A. Richardson, Jas. Robertshaw, Alderman B. Robinson (mayor of Salford), Charles Sever, H. Siegler, Joseph Stocks, and T. W. Wrathmell.

ASSOCIATE: Mrs. Inman, and Messrs. F. Fearnley, John Jones, J. B. Midgeley, jun., Henry E. Storey, Paul von Tscharner, and the Rev. J. Wood, B.A.

A number of presentations were announced, and the following letters read:—

LORD NAPIER OF MAGDALA.

"The Lees, Folkestone, Kent.

"My Dear Sir,—The Dowager Lady Napier of Magdala desires me to express her heartfelt thanks to the Manchester Geographical Society for the very kind letter of sympathy which you have favoured her with from the Society. The blow has been a crushing and unexpected one, for my dear father seemed to have years more of strong life in him; but the sympathy expressed by all around, such as that which you convey, has been a great consolation to her, and to the family in general.—I am, my dear sir, yours faithfully, (Signed) "NAPIER OF MAGDALA."

MRS. HUTTON.

"Victoria Park, April 16, 1890.

"Dear Sir,—Will you please convey to the members of the Geographical Society my heartfelt thanks for their sympathy with me and my family in the great sorrow which has fallen upon us? I value much the appreciation of my husband's services to the Society, as expressed in the resolution forwarded to me by you.—Believe me, yours faithfully, (Signed) "A. HUTTON."

MRS. GRAFTON.

"London, W., Feb. 28, 1890.

"Sir,—May I request you to convey to the members of the council of the Geographical Society of Manchester our sense of their sympathy with me and with my children in the great sorrow that has come upon us, and our best thanks for the kind letter we received from them through you?—I am, sir, faithfully yours,

(Signed) "EMILY GRAFTON."

MRS. CLARKSON JOHNSON.

"Ebor Villas, Broughton Park.

"Mrs. Clarkson Johnson and her children desire to thank the Council and members of the Geographical Society for their vote of condolence, and for the sympathy expressed to her and her children through Mr. Sowerbutts."

The following papers were read:—

"Souvenirs of "My Sojourn with Emin Pasha," by Dr. Zucchinetti; Captain Binger's "Travels from the Niger to the Gulf of Guinea," from the Paris Geographical Society's Bulletin; "An Historical Note on the Portuguese in East and West Africa;" "A Note on the Newfoundland Question, Geographical, Historical, and Piscatorial," by the Secretary.

A lively discussion ensued on the conclusion of the papers.

The death of Mr. Mackay, the engineer missionary at Lake Victoria, having been reported by the Secretary, a resolution of condolence was proposed and carried, and was directed to be sent to the Church Missionary Society.

HUNDRED AND TWENTY-EIGHTH MEETING

Of the Society, in the Memorial Hall, on Friday, May 16, 1890, at 7-30 p.m., the Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

The members of Chambers of Commerce in the district had been invited to this meeting.

Mr. W. Y. Campbell, the hon. vice-president of the Witwaserarandt Chamber of Mines, being on a short visit to this country, addressed the members on "The Transvaal: its History, Geography, Progress, and Mineral Wealth." (See p. 85.)

The address was illustrated with four large maps by Mr. Campbell, and Messrs. Donald Currie and Co., of the Castle Line, presented to the members 150 handbooks of South Africa, with views and a capital map.

Questions were asked by several members, and replied to; and Mr. Belisha having made some remarks on the various goldfields, votes of thanks to Mr. Campbell, Messrs. Donald Currie and Co., and to the Chairman brought the meeting to a close.

HUNDRED AND TWENTY-NINTH MEETING

Of the Society, at the Nadin Reservoir House, and at the Chapel House, Ashworth, on Saturday, May 17, 1890.

The members were driven in carriages from Heywood to the Ashworth Valleys, and rambled through them to the Chapel House and the reservoirs of the Heywood Corporation. Photographs were taken, and the geology and botany of the Valleys, the folklore and local literature, were duly dealt with. Tea was served at the Chapel House and at Nadin, and very hearty votes of thanks were passed to Mr. Councillor Buckley, Mr. Diggle, the engineer, the Corporation, Mr. Booth, and all those who had contributed to the enjoyment of the day.

HUNDRED AND THIRTIETH MEETING

Of the Society, in the Library, on Tuesday, May 20, 1890, at 7-30 p.m., Mr. W. Johnson in the chair.

The election of the following members was announced:—

Ordinary: Mrs. Croasdale, and Messrs. G. F. Brammer, W. H. Buckley, Rev. J. A. N. Hibbert, Fred Hilton, Siegfried Jaffé, Frank Jefferies, J. M. Jones, J. E. Richardson, Wm. Robinson, E. Ward, and S. T. Woodhouse.

Associate: Messrs. John Fielden, Wm. Hodgson, Edward Isherwood, Thomas Pearson, and Isaac Thompson.

Honorary: Colonel Sir Francis de Winton, R.A., K.C.M.G., F.R.G.S., &c.

A number of presentations were announced and the following letters read:—

MR. H. M. STANLEY.

"34, De Vere Gardens, W., 16th May, 1890.

"Dear Sir,—I have to return you my best thanks for your letter and for the published *Journals of the Manchester Geographical Society* you are so good as to send me, which I shall read with interest as soon as I can find a spare moment.—Yours faithfully, (Signed) "Henry M. Stanley."

CHURCH MISSIONARY SOCIETY.

"London, May 2/90.

"Dear Sir,—I am directed to thank you for your letter of yesterday's date, forwarding a resolution of the Manchester Geographical Society expressing sympathy on the death of our devoted Uganda missionary, Mr. Alexander Mackay, and to inform you that it will be read before committee on the 12th instant.—I am, &c.,

(Signed) "J. E. Duncan."

A paper by Mr. A. Cook, Sandakan, British North Borneo Company, on "The Recent Development and Exploration of British North Borneo," was read (see p. 63). The paper was illustrated by a large map.

A series of letters on the Shan Country—notes of a journey by the Rev. Dr. J. N. Cushing—were read and commented on.

HUNDRED AND THIRTY-FIRST MEETING

Of the Society, at Hebden Bridge, on Thursday, June 12, 1890, Mr. Councillor Roper in the chair.

The members were driven in carriages from Hebden Bridge, past Heptonstall, to the ridge, where lunch was served, and to the foot of the Widdop reservoir of the Halifax Corporation. After inspecting the works the drive was resumed through the woods of Lord Savile, past Hardcastle Crags, and back to Hebden Bridge. The weather was fine, and a pleasant and very profitable day was spent, the woods being in their best and most glorious dress.

HUNDRED AND THIRTY-SECOND MEETING

Of the Society, in the Free Trade Hall, on Friday, June 20, 1890, at 8 o'clock p.m., Mr. S. Ogden, J.P., in the chair.

This was a joint meeting of the Manchester Athenæum and of this Society, and was presided over by the president of the Athenæum, who is one of our vice-presidents. Every seat was occupied, and the meeting was very brilliant.

Mr. H. M. Stanley, who was accompanied by Mr. William Bonney and a Zanzibari, addressed the meeting on "His Recent Journey Through Africa."

The Rev. S. A. Steinthal moved a vote of thanks to Mr. Stanley for his address, which was seconded by Mr. Henry Lee, J.P., a vice-president, and president of the Manchester Chamber of Commerce, and carried by acclamation.

HUNDRED AND THIRTY-THIRD MEETING

Of the Society, held in the Memorial Hall, on Thursday, June 26, 1890, at 6-30 p.m., Mr. S. Ogden, J.P., in the chair, and on his retirement Mr. J. Irlam.

The Chairman's annual address was read by the Secretary (see page 92).

Mr. Wm. Stanley exhibited a very beautiful collection of views of old halls near Manchester, and described them.

The Victorians and their friends gave a series of reproductions of statuary, the groups round the Albert Memorial, and others, which were very gracefully reproduced.

Music and refreshments were provided, and after votes of thanks the meeting closed.

THE FIFTH ANNUAL MEETING

Of the Society, held in the Library, Brown Street, at three o'clock, Friday, July 25th, 1890, the Rev. S. A. STEINTHAL in the chair.

The minutes of the last Annual Meeting, having been read, were approved.

The Chairman's annual address which had been given at the last meeting of the Society, is herewith presented.

THE ANNUAL ADDRESS OF THE CHAIRMAN OF THE MANCHESTER GEOGRAPHICAL SOCIETY, DELIVERED TO THE MEMBERS IN THE MEMORIAL HALL.

IT is one of the duties of the Council of the Manchester Geographical Society to present to the members a summary of the chief events of interest connected with the progress of the science it was established to cultivate, and based upon the notes prepared by the secretary,* a survey of this character is now laid before the Society.

In connection with the great Paris Exhibition special attention was paid to the present condition of geographical knowledge. A most admirable collection of maps, of books dealing with geographical science, and of models was prepared, throwing light not only on the configuration of the earth's surface but giving a vast amount of information on ethnology, and on the various productions of the globe, thus displaying the commercial advantages to be derived from geographical study. But while thus prominently dealing with the cosmopolitan aspect of our science, the Exhibition illustrated, with rare completeness, the accuracy with which the study of France itself and its dependencies had been pursued, and materials obtained to enable the national resources and advantages to be developed and made known. Most striking is the attention which is shown to the record of all matters relating to municipal details, especially of the city of Paris. The maps and models which describe its topography, its water and gas supply, its system of drainage, are all utilised in elaborate treatises, giving statistics, with accounts of hospitals and schools, of civil government, and police. A study of the materials thus provided, with admirable completeness and characteristic lucidity, would be in itself a valuable education. In connection with the Exhibition there was a special Geographical Congress, of which our proceedings give a report, presented by our representatives on their return from Paris.

While speaking of France it may be fit to mention the valuable explorations and discoveries of M. Martel in the Cevennes, and it is hoped that Mr. Mark Stirrup, F.G.S., one of the most active members of our Council, will favour the Society by again exhibiting the valuable photographs of the head waters of the Lot and the Garonne, with their caves and water sculptures, which he has personally examined.

A geological map of France, in about sixty sheets, has lately been completed by the Government of France.

Our own Government is actively engaged in revising the Ordnance Survey, so that we may hope before long to have maps of our own large towns which shall fairly represent the numerous changes they have undergone since the publication of the original survey.

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* The Geographical Journals, Whitaker, and The Statesman's Year Book, were largely used in the compilation of the notes, and may be referred to for details.

In Asiatic geography the chief achievements to be noted are those attained by Russian travellers, who have explored much of the hitherto unknown country of Central Asia. Prejevalsky, while endeavouring to add to the brilliant work he had already accomplished, died on November 11th, 1888, at Karakol, a small town on Lake Issik-Kul, within the Russian territory. But his companion, Colonel Pyevtsof, continued the expedition, and having wintered at Nia is supposed to be endeavouring to cross the mountains into Thibet. Another Russian explorer, M. N. A. Notowich, is on his way to Thibet from Eastern Turkestan. Mr. Rockhill, an American, vainly attempted to reach Lhassa in disguise, but being discovered he was compelled to return to China. Though he was not able to carry out his plans completely, he has added much to the knowledge, still so scanty, of this region. What the results of M. Martin's (a French traveller) journey to Thibet, or of Captain Grombchowski's expedition to the Altyn-Tagh, will be we cannot yet say. Dr. Joseph Troll spent the winter in Chinese Turkestan, and leaving Yarkand in May crossed the Karakorum Pass, and reached Ladakh in June, exploring the upper Indus. Lieutant Younghusband and Captain Durand have been exploring the passes of the Himalayas and the Hindu Kush north of Kashmir, and the Royal Geographical Society has awarded its gold medal to the former, as an acknowledgment of the additions he has made to the geography of this district. Unfortunately the results of these journeys are not accessible to the public, as the Indian Government treats the reports as state papers.

Colonel M. S. Bell has for seven years (1882-9) been exploring the various passes which lead from Armenia to China across the mountain ranges which divide Southern from Northern Asia, with results which will no doubt be beneficial to commerce in future days. M. Bonvalot, with Prince Henry of Orleans, is engaged in the arduous task of crossing the whole of Asia from Russia to Tonking. When last heard of they were at Kulja, and were about to enter the mountainous regions from which the great Chinese rivers take their rise.

Captain Cupet, in the beginning of the year 1889, explored a road between the Upper Mekong and Annam, and the Songka, or Red river, has for the first time been navigated by steamer up to the Chinese province of Yunnan.

Dr. Schweinfurth's visit to Yemen did not add much to geographical knowledge, but its result was in so far valuable as it showed that the inhabitants were hospitable and that slight risk was incurred while travelling in Arabia.

The Caucasus has been very thoroughly explored by Mr. Freshfield, with Mr. C. F. Dent, Mr. Woolley (a member of our society), Captain Powell, and four Swiss guides. The main object which these travellers had in view was to discover traces of Messrs. Donkin and Fox, who had been lost in 1888. The expedition was successful in so far as it found what must have been the last camping place of the unfortunate travellers, from which they had attempted the ascent of Dykh-Tau (16880ft.). Though the bodies have not been recovered, the evidence of no foul play having taken place was conclusive. Mr. Woolley was successful in reaching the summit of Dykh-Tau and several other peaks. Messrs. Vittorio and Erminio Sella were also successful in ascending Elbruz, and were able to secure some of the finest photographs of mountain tops and cloud scenery ever obtained.

As usual, the work done in Africa has exceeded in interest all that was accomplished elsewhere. In the territory of the Imperial East African Company, Mr. J. R. W. Piggott has traced the River Tana well-nigh to Mount Kenia, and then proceeded southward by routes hitherto unexplored by Europeans to Mombassa. Dr. Hans Meyer was brilliantly successful in his endeavours to ascend Kilima Njaro. He has displayed, in his persevering attempts, a courage and endurance which secure him high rank even among the illustrious band of African travellers. The Zambezi and the countries adjoining its basin have been the scene of much activity during the year, the Portuguese displaying something of the zeal which made their name illustrious in the early history of African discovery; but, after all, the greatest achievements were made by English travellers. Mr. Rankin has explored the Chinde mouth of the Zambezi. It has been disputed whether the channel he claims to have discovered has not been previously known, but it is certain that he has succeeded in proving it to be navigable by vessels of four to five hundred tons burden. For the geography of the Upper Zambezi science is deeply indebted to Mr. F. S. Arnot (the missionary) and Mr. Selous, the former having explored the whole country from the Transvaal and the territory of Bamangwato, the north east of the Kalahari desert and the river Botletle, which in the rainy season flows towards the east into the salt marshes of Ntwétéwe, and in the dry season west to Lake Ngami; and having traversed the Barotse territory visited the Portuguese settlement of Angola, and then retraced his steps to the Zambezi. In July last he returned to the Garenganze country and to Chitambo, the village where Livingstone met his death—having successfully prepared the way for the missionaries in whose work he is so deeply interested. Mr. Selous has followed the Upper Zambezi into the Marutse Mabunda country, and to the south into Bamangwato, and last May undertook a journey into Mashonaland, a preliminary to further journeys.

Mr. Delcommuni, an officer of the Commercial and Industrial Society of the Congo, has added greatly to our knowledge of the tributaries of that great stream, having explored the Kassai and the Ovalunna, and Lake Leopold II., which is its reservoir. Besides he has traced the Lulua and the Sankuru, and the Lomami, which he has succeeded in distinguishing from the tributary to the Sankuru of that name, having navigated it for over 577 miles to about the spot where Commander Cameron crossed it.

In the French Congo district M. Crampel has explored a large amount of territory hitherto untraversed, and has laid down, by compass observations, a track of over 1,302 miles of hitherto unexplored country. He has traced a large part of the course of the Ivindo, one of the tributaries of the Ogowé, with several of its affluents, the names of which are all new to the map of Africa. He also met with the pigmy race known to him as Akka.

Captain Kund has again tried to penetrate into the interior of the German Cameroons, and has found the native population actively hostile. He reached the upper part of the river Niger, where, at the village of Zonon (3° 48′ N. lat. and 12° 20′ E. long.), he left his companion Lieut. Tappenbeck. Unfortunately, Lieut. Tappenbeck's name must be added to the many martyrs of African travel. Captain Kund has obtained a large amount of ethnological information during his researches. He has met with undersized races, of great courage and audacity, who are, in some respects, akin to the Bushmen of South Africa.

Dr. Zintgraff's journeys have also been in the Hinterland of the Cameroons, ascending the river Benue to Ibi, and surveying a district hitherto left blank on African maps.

Captain Binger has finished a two years' exploration of the upper waters of the Niger; beginning at Bamaku, on the Joliba, he traversed Mosi, Salaga, and Kong, and finished his journey at Grand Bassam, on the Ivory Coast, on the 20th March, 1889. The French geographical journals are justly proud of the achievements of Captain Binger, who has opened, it is believed, a vast territory to those who will follow his steps and adopt the conciliatory spirit by which he made himself friends all along his route.

Much information has been obtained on the geography and social condition of Morocco by Mr. J. Thompson and Lieutenant Crichton Brown, as well as by Mr. L. B. Lee and his brother. We have to regret the death of M. Camille Douls, the well-known and distinguished French explorer of the Western Sahara, who had left Tangiers in August, but was killed soon after passing Tafilet.

All these additions to our knowledge of Africa are no doubt of great importance, but they failed to call forth the interest which was directed to the Emin Pasha relief expeditions of Dr. Peters, and especially of Mr. H. M. Stanley. Dr. Peters penetrated by the Tana river through the Masai lands to Uganda. Frequent reports as to his death reached Europe, but we are glad to say that though he was not able to reach Emin Pasha, he has been able to return to the coast in safety, and the report of his adventures is looked forward to with great interest. Stanley has, however, accomplished the task he undertook. It is unnecessary to summarise here the tale which our most distinguished member can tell so much more satisfactorily, and with which you all will be familiar by the time this summary can be read by you. Let it suffice to record the discovery of the vast forest, the rectification of the outline of Lake Victoria Nyanza, and the startling announcement that in Mount Ruwenzori and the chain of mountains over which it rears its snowy peaks, we have at last fixed those Mountains of the Moon, of which ancient geographers have told such strange discordant tales. No story can exceed in interest the account of the arduous struggle against physical and moral obstacles which in his journey from Yambuya on the Aruwimi, which he left on the 20th June, 1887, till his arrival at Bagamayo on the 5th December, 1889, Mr. Stanley, with unexampled heroism, met and overcame, with the assistance of his gallant companions, Captain Nelson, Lieutenant Stairs, Mr. Jephson, and Dr. Parke. We join in the universal sorrow which laments the deaths of Major Barttelot and Mr. Jamieson and the invaliding of Mr. Rose Troup.

Though it is not strictly a geographical occurrence, the granting of royal charters to two great British trading companies cannot be overlooked, as the establishment of the East African and South African Companies, together with the progress which German and Italian enterprise are making, promise noteworthy advances in our knowledge of the great African continent.

Crossing the Atlantic, we rejoice in the progress made in the survey of the north-west territories of Canada by the Survey Department of the Dominion under the superintendence of Mr. G. Devile and Professor Selwyn, and welcome the valuable information contributed in the papers of Messrs. G. M. Dawson, Fawcett, Ogilvie, Tyrell, M'Connell, and Bell.

Lord Lonsdale left Winnipeg in March, 1888, and plunged into the unknown regions to the north-west, worked his way to the shores of the Arctic Seas, and thence travelled to the Pacific Coast, reaching Alaska in February, 1889, after many trying privations and dangers. A similar journey was undertaken last April by Mr. E. W. Everest and Count de Sainville, who left Winnipeg with the intention of exploring the Arctic coast from the Mackenzie mouth to Behring Strait. The result of their journey is anticipated with great hopes.

The vast area of the United States is being carefully surveyed under Government auspices by their officers, by the members of the Geological Survey, and the Signal Department of the United States army. One-half of the work has been already issued on a scale of 1-125,000, or on about half the scale of our one-inch Ordnance maps. A larger map than this is in preparation, and has been published for nine or ten states. The boundary between Alaska and the British north-west territories is being carefully surveyed by Mr. J. E. M'Grath, and the result will show whether Mount St. Elias is on British or United States territory.

The controversy as to the true source of the Mississippi river has been investigated by Mr. J. V. Brower, who has refuted Captain Glazier's claims to have traced it to what he called Glazier's Lake, and the old claims of Lake Itasca as the true course have been re-established and confirmed.

In South America M. Chaffajon has completed his journey to the head-waters of the Orinoco, and is at present engaged in exploring the Goajira peninsula.

M. Coudreau has most successfully completed the mission entrusted to him by the French Minister of Public Instruction in exploring the mountains of Tumuc-Humuc, in the extreme south of French Guiana, and has obtained a varied mass of geographical, anthropological, and meteorological information, as well as valuable collections of the fauna and flora, which the adventurous traveller has brought home. He has also secured the elements for the complete study of two important dialects—the Tupi and the Caribbean.

Col. A. P. Labre has explored the central district of South America lying between the Madeira and the Parana, and our society is indebted to Consul Guillaume, of Southampton, for an excellent paper on this journey, together with an admirable map illustrating the same.

Dr. P. Ehrenreich has returned from Cuyaba, descending the Tocontins, while Dr. A. Heltmar has since 1888 been occupied in exploring North Peru.

In Australasia several important additions to our geographical knowledge have been secured. Right in the centre of the Australian continent Mr. Willshire discovered an active volcano, between 150 and 200 miles north-west of Alice Springs, and Mr. David Lindsay, who has crossed the continent from Dalhousie on Lake Eyre to the Gulf of Carpentaria, confirms the discovery. According to Mr. Lindsay the natives call the mountain "the ever-burning hill." Mr. Tietkins has been exploring the regions north of Lake Amadeus, while Mr. H. Y. L. Brown, the Government geologist, has obtained several valuable results by his examination of the Musgrave mountains. In North and North-west Queensland, Mr. A. Weston, for the Government, and Mr. A. J. Vogan, for the Royal Geographical Society of Australia, have been exploring districts hitherto undescribed. Professor Lumholtz has completed his travels in Queensland, and has unpleasantly startled us by his vivid description of the cannibalism of the natives, while giving most valuable information as to the geology, the fauna, and flora of the country.

Professor Haddon, Captain Douglas, Dr. Guppy, Mr. Basil Thompson, and Mr. W. D. Pitcairn have made excursions to the islands extending from Java to New Guinea, the Louisiade Archipelago, and North Queensland, and while greatly enlarging our knowledge of the geography of these districts, have also added to our knowledge of their geology and natural history.

Sir W. Macgregor has ascended the peaks of the Owen Stanley Range (so-called after the commander of the Rattlesnake, who explored this country in 1846-50, with Professor Huxley as his medical officer), in New Guinea, and has named the highest point, 13,121 feet above the sea level, Mount Victoria. He found in the northern valleys of the range a numerous and settled population. An interesting *resumé* of this journey has been given to the society by Mr. J. Thompson, F.R.G.S.A. of Brisbane, illustrated by a capital map of the district.

It is only just in this connection to refer to the botanical researches of Dr. E. Hellwig in the neighbourhood of Finsch Haven, and in German New Guinea.

The chief features of North Polar exploration are to be found in the journeys of Messrs. Kükenthal and Walter to Spitsbergen, and of Mr. Nansen's successful expedition across Greenland. Mr. Kükenthal was sent out by the Geographical Society of Bremen, together with Mr. Walter, and these gentlemen have been able very considerably to correct the charts of the coast of Spitzbergen and the neighbouring islands, and have marked them with valuable soundings and observations as to currents. The vessel in which they started, the Beratine, was unfortunately wrecked, Another whaler, the Cecilia Malene rescued them, and on board of this they were able to continue their investigations successfully.

Mr. Nansen's extraordinary achievement in crossing the vast glaciers of Greenland will long be remembered and its details carefully studied. He has successfully overthrown the opinion maintained by some geologists that so vast a country as Greenland could not be entirely covered by glaciers. His intended attempt to reach the Pole itself will be watched with the deepest interest, and hope that so intrepid and energetic a traveller will not fail, and if daring and perseverance can make success possible, where so many have been overcome by the force of Nature, he will succeed.

This hurried summary of the practical work of geographical research fails, no doubt, in even naming all that has been done by the persevering energy of those to whom the world is indebted for a knowledge of its own conformation, its inhabitants, and products. The work is too wide to be comprised within our brief limits. But the results of all this self-sacrificing enterprise would be lost if they were not made known to society and their value made practical by educational appliances. Our country is only slowly awakening to the importance of the study of Geography.

The Royal Geographical Society for a long period was the only scientific institution in the country which recognised its value. We can now claim that it has several sister associations promoting the study, and among them may put forward the work done by our society as not without its well-marked influence. Our Journal is welcomed abroad as well as at home, and its interesting character is largely due to the devoted zeal of the Editor and his able coadjutors, best known to us under the name of the Victorians. It is only fair, while speaking of these gentlemen, to mention the valuable assistance they have often given to us by illustrating the evening addresses by their specially-prepared maps; and to refer once more to the disinterested work done in lecturing and all other practical ways by Mr. Sowerbutts, without whose activity it can be asserted our Society would neither have come into existence nor have accomplished the work it has done.

It is gratifying to see that the great national Universities of Oxford and Cambridge have appointed professors or readers on our science, and have included it in their extensive schemes. It is, however, a matter of special regret to us in this district that the Victoria University has not yet been called upon either to recognise such appointments at any of its Colleges or to include the subject in its extension plan.

The Chambers of London and of Manchester have both made Commercial Geography part of their schemes of examination, entitling those who pass in it, with other branches, to certificates; and our society is itself engaged in preparing plans for promoting geographical study in elementary and evening schools.

The Report of the Council to the members and the year's Balance Sheet (having been duly audited by Mr. Gregory and Mr. Aldred) were read as follows :—

ANNUAL REPORT.

In very many respects the Council feel that their Annual Report to the Geographical Society is a more cheerful and hopeful one as to the future than they have been able to lay before the members in previous years, while in respect to the work done its record is as good as in former sessions. The roll of members has been very materially increased, 113 ordinary, 36 associate, and 7 corresponding members having been added to the list. On the other hand we have to deplore a very heavy diminution owing to death. During the year we have lost Mr. John Slagg, one of the founders of the Society, Mr. Alderman Goldschmidt, one of its trustees, Mrs. Roby, one of the members of its Council, and twelve others, whose places it will be difficult to fill. The services rendered by these friends have been duly recognised by special resolutions sent to their bereaved representatives. Though the death of Mr. Hutton occurred since the year 1889, his great services to the Society make it impossible to pass over the loss you have sustained in his decease without this note. The resignations have been 45. The Council are glad to be able to report that the list of members which, at the close of the year 1888, numbered 695 now stands at 801. Though this increase is pleasing, it is not yet satisfactory, as till the Society has a roll of 1,000 members its means will not be sufficient to do justice to the claims made upon them. It is also to be regretted that there are very many of the annual subscriptions in arrear, and though the great majority of these are perfectly safe, yet it would greatly aid the economical management of the Society if members would not cause the officers to make repeated application for their contributions.

The Balance Sheet shows that although there have been extra calls upon the treasurer during the twelve months for the publication of the Journal, which covered a year and a quarter's issue, and a very large number of meetings, the year's income has exceeded the expenditure. The Council is altogether unable to say how greatly the members are indebted to the Secretary for the work he has done since the establishment of the Society. Without his enthusiasm and energy it would never have gained its present high position. The debt, which has been so grievous a burden to active work, is now reduced to a very small amount, and if a slight effort only is made will soon be altogether cleared off, and if the arrears which have been already named are collected, a satisfactory financial basis for future operations will be secured.

The number of meetings held during the year 1889 was 33, and from January to July, 1890, was 20, making in all 53. The following list will show the varied character of the papers, &c.:—

EUROPE.

Athens and Neighbourhood: Messrs. Pingstone and Sankey. Sea of Azov: Rev. A. Colbeck. From Newcastle to the Yenesei. The Great Cave of Adelsberg. The Snowline of the Tatra Mountains: M. K. Grissenger. A Spring Ride in Southern Spain. The Hardy Norsemen: M. Du Chaillu. Duke Frederic and Bremen.

ASIA.

The Rival Routes to China: Mr. Holt S. Hallett. The Coins of China: Consul Gardner. Peking and the Pekingese: Rev. G. Owen. Floods in China: Chinese Embassy. Formosa: Mr. Rippon. Notes of Travel from Shanghai to St. Petersburg: Mr. J. M. Molesworth. The Necessary Extension of Indian Railways for the Development of British and British Indian Trade: Mr. Holt S. Hallet. The Decree for the Great Chinese Railway. Siberian Trade: Mr. H. N. Sullivan. Chinese Chess.

AFRICA.

Fernando Po: Rev. T. Parr, M.A. East Africa: Rev. L. Scott (Views). Congo: Mr. R. C. Phillips (Views). El Senoussi and the Mahdi. The Island of Lukoma: Archdeacon Maples. Morocco and the Moors: Mr. J. Thomson. The Cape Colony, Transvaal, &c.: Mr. W. Ashman. Mashonaland: Mr. F. C. Selous. The Manners, &c., of Congo Natives: Mr. R. E. Dennett. Nyassa: Capt. Lingard. Nyassa: Mr. F. Moir. The Portuguese Possessions in Angola, &c.: Mr. J. Rippon. Charter of Incorporation of British South African Company. Cotton Interests in Gold Coast, &c.: Governor

Moloney. Melodies of Natives of West Africa: Governor Moloney. Lagoons of the Bight of Benin: Mr A. Millson. In Tropical Africa. Swaziland. Italian Interests in Africa.

AMERICA.

Florida and the English: Mr. A. Montefiore. The Creation of New Counties in Northern Minnesota: Mr. A. J. Hill. Recent Travels in Peru and Bolivia: Chevalier H. Guillaume.

AUSTRALASIA.

Taranaki, New Zealand: Mr. R. H. Gibson, B.A. Meteorology in Queensland: Mr. C. L. Wragge. Australia, Curiosities of: Mr. W. Ashburn. Leprosy in the Sandwich Islands.

SOCIOLOGY.

The Effects of Manufacturing Processes in Relation to Health: Dr. Arlidge. The Manners, Customs, and Superstitions of the Congo Natives: Mr. R. E. Dennett. The Melodies of Gold Coast Tribes: Governor Moloney. Chinese Chess. Halifax Waterworks and the Hebden Valley: Councillor J. Foster.

EDUCATION.

Teaching of Commercial Geography in Primary and Secondary Schools, &c.: Mr. J. H. Silberbach. Teaching of Geography with New Appliances. Teaching of Commercial Geography and the Value of School Museums: St. Bede's. Yorkshire Union of Mechanics' Institutes: Report of Delegate. British Association: Report of Delegate. Sir F. de Winton's Address on Commercial Geography at the British Association. What Geography Ought to Be: Prince Krapotkin. The Geographical Distribution of Plants: Mr. L. H. Grindon. Geography: Mr. C. Marvin.

VISITS.

Owens College Museum—Geology in the Museum, Coalfields, and Industries: Prof. Boyd Dawkins. Technical Schools, Princess Street and Peter Street—Cotton, Metal, Chemical, &c., Industries. Ardwick Museum—Local Natural History, Geology, &c., &c. General Post Office—Letter Communication, Telegraphy, and Administration. St. Bede's College—A Model School, Commercial Museum, Treasurer of the Library, &c. Accrington, Whalley, Mytton, Stoneyhurst, Longridge, Preston. A View of the Uplands and Valleys of the Northern Part of the County; Historical and Ecclesiastical Remains; County of Great Interest, Geologically and Historically; a Great Educational Institution; Valuable Library, Astronomical Works of Value, Photography, the Daily Sun Spots, &c., &c. The Congress of Geography in Paris (See Special Report). The Exhibition, Paris, &c., &c. Botanical Gardens: Address by Mr. L. H. Grindon.

The thanks of the members are due to all the friends who have so ably contributed to the meetings.

The Council have continued this year the arrangements for excursions of the members to places and objects of interest in the neighbourhood, and have sent deputations to various meetings, among which must be specially mentioned the Congress of Geographical Societies held in Paris, on which a report was presented by the secretary.

It would be unfair to pass over the special work done by the Victorians, the most energetic working members of the society. To their labours we are indebted for the careful analysis of the contributions of foreign societies to geographical science which form so valuable a feature of our Journal, and the preparation of maps in illustration of lectures and papers read before the society. They have now undertaken the preparation of lectures to be addressed to popular audiences whereby the study of geography will be cultivated in places which the society could not otherwise reach. The Council gratefully record the obligation which they, in common with all the members of the society, owe to these gentlemen.

Very considerable additions have been made during the year to the library. The proceedings of foreign societies received in exchange for our Journal, the generous gifts from colonial and foreign governments and municipalities at home and abroad, and private donors, have all been duly acknowledged. The members are, perhaps, unaware of the rich storehouse of geographical knowledge which they have the right to use. Unfortunately the society's means do not allow a proper display of the books and maps it possesses. When Manchester does greater justice to the claims of the Geographical Society it will be possible to utilise its resources more completely. The publication of the Journal has been one of the most useful of the society's activities. The Council report with pleasure that they receive from competent authorities the assurance of the service it renders to geographical science. Many who are unable to attend the meetings of the society peruse the proceedings recorded in its pages with profit and with pleasure.

In conclusion, the Council commend the interests of the society to the members, with the hope that all will do their utmost to increase its means and enable it to carry out with increasing efficiency the great objects for which it was established.

OBITUARY.

The Society has suffered severely by deaths during the year 1889. Among those who have thus gone may be mentioned Mrs. Roby (one of the members of the Council), Mr. Harold Woolley, the Rev. Dr. Macfadyen, Mr. T. A. Walker (contractor for the Manchester Ship Canal), Mr. Alderman Goldschmidt (one of the trustees of the Society), Mr. John Slagg, M.P. (one of the founders of the Society), Mr. Ventry de M. Mellin, Mr. J. J. Armitage, Mr. W. A. Beith, Mr. A. Dehn, Mr. H. Jeffries, Mr. D. T. Craig, Mr. M. W. Thompstone. Also the following life members: Mr. J. W. Edwards, and Mr. R. Peacock, M.P.

The dropping out of members by death is one of the painful experiences of a Society like ours. We are grateful for the generous help they have given us whilst here, and revere their memory when departed. The work they have left unfinished must now be taken up by other hands, and a list such as this one is a call to our members to help us in the effort to obtain the addition of new members to take their places in the great work we have in hand, whilst the call to those who are members is equally great to do all they can in the short space it may be they have allotted to them in this place.

REVENUE ACCOUNT,

January 1st to December 31st, 1889.

INCOME.	£	s.	d.	£	s.	d.
To Balance, 1888				31	15	10
„ Members' Subscriptions—						
„ 406 Ordinary at 21s.	426	6	0			
„ 186 Associate at 10s. 6d...	97	13	0			
„ 1 Society at £2 2s.	2	2	0			
				526	1	0
„ Transfer from Life Membership Account........				31	0	0
„ Bank Interest				0	17	3
				£589	14	1

EXPENDITURE.	£	s.	d.	£	s.	d.
By Expenses of Meetings..				162	2	3
„ Journal, Supplement 1887 to March, 1889				245	6	0
„ Rent, Rates, Gas, and Insurance................				51	6	0
„ Books, Maps, Binding, and Shelves for Library				23	19	5
„ Sundry Expenses, Stationery, Telegrams, Postage, Carriage, Cleaning Offices, &c.	89	0	5			
„ Commission and Expenses, Circulars, Postage, &c., for New Members..	13	4	2			
				102	4	7
„ Balance carried forward..				4	15	10
				£589	14	1

GENERAL BALANCE ACCOUNT,

January to December 31st, 1889.

ASSETS.	£	s.	d.	£	s.	d.
To Arrears of Members' Subscriptions, estimated at				299	15	6
„ Balance of Deficiency Account, as per last Balance Sheet	88	19	2			
„ Less Donations received..	3	11	6			
				85	7	8
„ Stock of Journals on hand				45	17	0
„ Cash in hand, Treasurer..	2	0	9			
„ „ Secretary..	2	2	4			
				4	3	1
				£435	3	3

LIABILITIES.	£	s.	d.
By Eleven Life Membership Subscriptions in Reserve....	115	10	0
„ Accounts owing to Sundry Persons	314	17	5
„ Balance from Revenue Account..	4	15	10
	£435	3	3

AUDITORS' CERTIFICATE.

Audited and found correct,

(Signed) THEODORE GREGORY, F.C.A.,
WILLIAM ALDRED, F.C.A., } Auditors.

July 25th, 1889.

The Report and Balance Sheet were adopted on the motion of the CHAIRMAN; seconded by Mr. M. STIRRUP, F.G.S.

The following were duly elected to be the Council and Officers of the Society for the ensuing term :—

PRESIDENT.

His Grace the DUKE OF DEVONSHIRE, K.G., Chancellor of the Victoria University.

VICE-PRESIDENTS.

The Most Hon. and Rev. the Marquis of Normanby.
The Right Hon. the Earl of Derby, K.G., &c., &c.
The Right Hon. Lord Egerton of Tatton.
The Right Hon. Lord Winmarleigh.
Lord Frederic S. Hamilton.
The Right Rev. the Lord Bishop of Manchester.
The Right Rev. the Lord Bishop of Salford.
The Worshipful the Mayor of Salford.
The Worshipful the Mayor of Stockport.
The Worshipful the Mayor of Rochdale.
The Principal of Owens College.
The Very Rev. Monsignor Gadd.
The Right Hon. Sir James Fergusson, Bart., C.I.E., M.P.
The Right Hon. A. J. Balfour, M.P.
Sir W. H. Houldsworth, Bart., M.P.
Sir Humphrey F. De Trafford, Bart.
Sir J. C. Lee, Kt., J.P.
Sir J. J. Harwood, Kt., J.P.
The Hon. Algernon Egerton, J.P.
Mr. B. Armitage, J.P., Chomlea.
Mr. Jacob Bright, M.P.
Professor W. Boyd Dawkins, M.A., F.R.S.
Mr. Edward Hardcastle, M.P.
Mr. Oliver Heywood, J.P.
Professor A. Hopkinson, M.A., B.C.L.
Mr. H. H. Howorth, M.P.
Mr. Isaac Hoyle, M.P.
Mr. J. Thewlis Johnson.
Mr. Henry Lee, J.P.
Mr. William Mather, J.P.
Mr. Samuel Ogden, J.P.
Mr. H. J. Roby, M.A.
Councillor Henry Samson, J.P.
Mr. C. E. Schwann, M.P.
The Rev. S. A. Steinthal, Chairman of the Council.

TRUSTEES.

Mr. Alderman C. Makinson, J.P.
Mr. J. Jardine, J.P.
Mr. S. L. Keymer (Vice-Chairman).

TREASURER.

Mr. T. R. Wilkinson, Manchester and Salford Bank, Mosley Street, Vice-Consul for the Ottoman Empire.

HONORARY SECRETARIES.

Mr. A. R. Gallé, Consul for Belgium, 29, Dale Street, Manchester.
Mr. F. Zimmern, Hardman Street.

COUNCIL.

Mr. E. J. Broadfield.
Mr. Frederic Burton.
Rev. L. C. Casartelli, M.A., Ph.D., St. Bede's.
Professor T. H. Core, M.A., Owens College.
Miss Day, Girls' High School.
Chevalier Robert Froehlich, Vice-Consul for Italy.
Mr. M. G. Glazebrook, M.A.
Mr. George Harker.
Mr. Elijah Helm.
Mr. A. Hughes, M.A.
Mr. Job Irlam.
Mr. Sydney L. Keymer, Vice-Chairman of the Council.
Mrs. Bosden T. Leech.
Mr. George Lord, J.P.
Mr. J. H. Nodal.
Mr. James Parlane, J.P., Consul for Paraguay.
Mr. Fritz Reiss.
Mons. Leon Gme. Le Roux, Vice-Consul for France.
Councillor William Sherratt.
Mr. Mark Stirrup, F.G.S., Hon. Sec. Manchester Geological Society.
Mr. Thomas Swanwick.

AUDITORS.

Messrs. Theodore Gregory, F.C.A., William Aldred, F.C.A.

SECRETARY.

Eli Sowerbutts, F.R.G.S., 44, Brown Street, Manchester.

The very hearty thanks of the Society to the officers for their past services, and regret that Dr. Greenwood had ceased to be the chairman of the Society, with thanks to him for his very valuable assistance in the past, were given ; and thanks to the chairman, for his services to the Society and for presiding, concluded the meeting.

The following were duly elected to be the Council and Officers of the Society for the ensuing term :—

PRESIDENT.

His Grace the DUKE OF DEVONSHIRE, K.G., Chancellor of the Victoria University.

VICE-PRESIDENTS.

The Most Hon. and Rev. the Marquis of Normanby.
The Right Hon. the Earl of Derby, K.G., &c., &c.
The Right Hon. Lord Egerton of Tatton.
The Right Hon. Lord Winmarleigh.
Lord Frederic S. Hamilton.
The Right Rev. the Lord Bishop of Manchester.
The Right Rev. the Lord Bishop of Salford.
The Worshipful the Mayor of Salford.
The Worshipful the Mayor of Stockport.
The Worshipful the Mayor of Rochdale.
The Principal of Owens College.
The Very Rev. Monsignor Gadd.
The Right Hon. Sir James Fergusson, Bart., C.I.E., M.P.
The Right Hon. A. J. Balfour, M.P.
Sir W. H. Houldsworth, Bart., M.P.
Sir Humphrey F. De Trafford, Bart.
Sir J. C. Lee, Kt., J.P.
Sir J. J. Harwood, Kt., J.P.
The Hon. Algernon Egerton, J.P.
Mr. B. Armitage, J.P., Chomlea.
Mr. Jacob Bright, M.P.
Professor W. Boyd Dawkins, M.A., F.R.S.
Mr. Edward Hardcastle, M.P.
Mr. Oliver Heywood, J.P.
Professor A. Hopkinson, M.A., B.C.L.
Mr. H. H. Howorth, M.P.
Mr. Isaac Hoyle, M.P.
Mr. J. Thewlis Johnson.
Mr. Henry Lee, J.P.
Mr. William Mather, J.P.
Mr. Samuel Ogden, J.P.
Mr. H. J. Roby, M.A.
Councillor Henry Samson, J.P.
Mr. C. E. Schwann, M.P.
The Rev. S. A. Steinthal, Chairman of the Council.

TRUSTEES.

Mr. Alderman C. Makinson, J.P.
Mr. J. Jardine, J.P.
Mr. S. L. Keymer (Vice-Chairman).

TREASURER.

Mr. T. R. Wilkinson, Manchester and Salford Bank, Mosley Street, Vice-Consul for the Ottoman Empire.

HONORARY SECRETARIES.

Mr. A. R. Gallé, Consul for Belgium, 29, Dale Street, Manchester.
Mr. F. Zimmern, Hardman Street.

COUNCIL.

Mr. E. J. Broadfield.
Mr. Frederic Burton.
Rev. L. C. Casartelli, M.A., Ph.D., St. Bede's.
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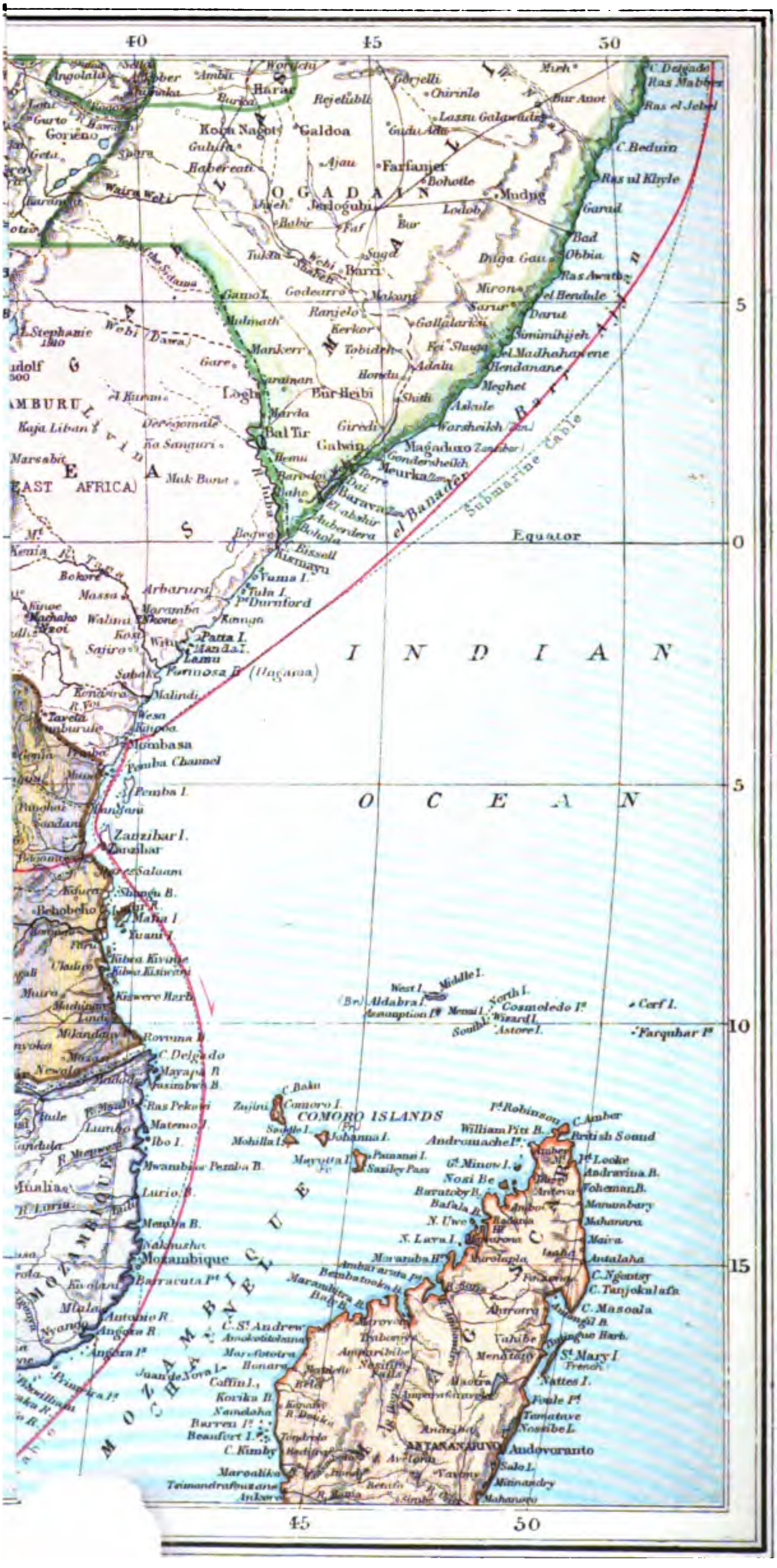
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Juan de Nova I.
C. St Andrew
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Beaufort I.
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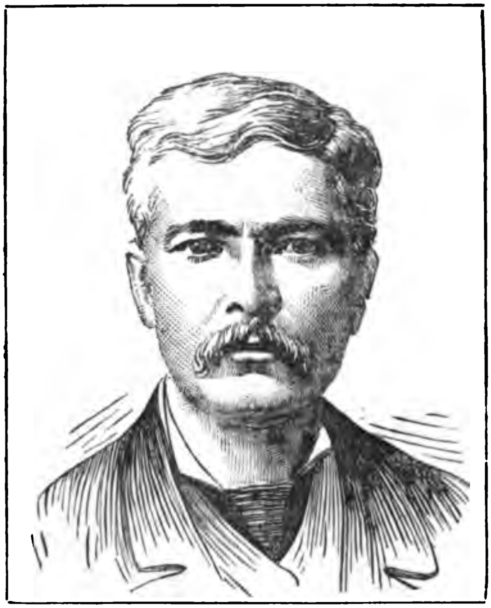
THE JOURNAL
OF THE
MANCHESTER GEOGRAPHICAL SOCIETY.

THE STANLEY RECEPTION.



MR. HENRY M. STANLEY. BORN 1841.

Honorary member of the Manchester Geographical Society.

(*By permission of the* DAILY GRAPHIC.)

JOINT Meeting of the Manchester Geographical Society and the Manchester Athenæum, at the Free Trade Hall, Friday, June 20th, 1890, at 8 p.m.

Mr. Samuel Ogden, vice-president of the Society and president of the Athenæum occupied the chair, and amongst others present were the Worshipful the Mayor of Manchester (Mr. Alderman John Mark) and a large number of the members of the City Council, the Lord Bishop of Salford (Dr. Vaughan), the Worshipful the Mayor of Rochdale, the Worshipful the Mayor of Salford, the Worshipful the Mayor of Stockport, Professor A. W. Ward, Litt. D. (principal of Owens College), Sir J. C. Lee, Kt., J.P., Mr. B. Armitage, J.P., Mr. Oliver Heywood, J.P., Mr. J. Thewlis Johnson, J.P., Mr. S. L. Keymer (vice-chairman of the Council), Mr. Henry Lee, J.P. (president of the Manchester Chamber of Commerce), Mr. W. Mather, M.P., Rev. S. A. Steinthal (chairman of the Council), Mr. Alderman C. Makinson, J.P., Mr. J. Jardine, J.P. (chairman

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of the Manchester Royal Exchange), Mr. T. R. Wilkinson (vice-consul for the Ottoman Empire), Mr. Frederick Burton, Rev. L. C. Casartelli, M.A. (St. Bede's), Professor T. H. Core, M.A. (Owens College), Miss Day, Chevalier Froehlich (vice-consul for Italy), Mr. George Harker, Mr. Elijah Helm, Mr. A. Hughes, M.A., Rev. M. G. Glazebrook, M.A., Mr. Job Irlam, Mrs. B. T. Leech, Mr. George Lord, J.P., Mr. J. Parlane, J.P. (consul for Paraguay), Mr. F. Reiss, M. L. G. le Roux (vice-consul for France), Mr Councillor W. Sherratt, Mr. M. Stirrup, F.G.S. (hon. sec. Manchester Geological Society), Mr. Thomas Swanwick, Mr. A. R. Gallé, and Mr. F. Zimmern (hon. sec.'s of the Manchester Geographical Society), the Venerable Archdeacon Anson, Rev. J C. Allen, Mr. Alderman Dickins, J.P., Mr. G. H. Gaddum, Mr. Gillibrand, Mr. Benjamin Heape, Mr. Alexander Ireland, Mr. Councillor Bosdin T. Leech, Mr. W H. Talbot (town clerk of Manchester), Mr. E. A. Fitzgerald (hon. sec. of the Manchester Athenæum), Mr. T. Schofield (secretary to the Manchester Athenæum), and Mr. Eli Sowerbutts (secretary to the Manchester Geographical Society).

The large hall of the Free Trade Hall was full, every seat being occupied by the members and the friends of the two institutions.

Mr. Ogden said the manifestation of feeling with which Mr. Stanley had been received spoke louder than words the gratification they had in seeing him again on that platform. After triumphing over all the dangers and difficulties of his great journey he was now amongst them, sound in health and whole in limb. The members of the Manchester Athenæum for many years past had been in the habit of listening to men distinguished in literature and in science from that platform, but it might safely be affirmed that never on any former occasion had so profound an interest attached to the personality of any individual as to that of the distinguished visitor who was present with them that evening. He was sure that millions of their fellow-countrymen who had been moved by reading the account of the marvellous adventures of Mr. Stanley felt a deep regard and personal interest in him because they knew how well and nobly he had served the English nation. He had done so from principles, and sentiments, and feelings, and motives higher than those even of patriotism. It had been from a noble impulse and determination that as far as in him lay he would endeavour to serve the interests of humanity at large. He remembered reading some time ago that the United States Minister in Turkey, so much as 18 or 20 years ago, knowing Mr. Stanley well, and at a time when he was nearly unknown to the world, predicted that he (Mr. Stanley) was born to achieve greatness, and that he would yet leave his mark behind him in the world. That Minister said Mr. Stanley had all the qualities of great travellers—a hardy frame, invincible courage, and determination to persevere in any undertaking upon which he entered with the view of prosecuting it to success. That prediction was very early realised, to a very large extent, for soon after that Mr. Stanley had the honour of receiving at the hands of the Royal Geographical Society their gold medal, and the Foreign Minister of that day was requested by the Queen to convey to him Her Majesty's high appreciation of the courage, the prudence, and the zeal with which he had accomplished his mission of finding Livingstone. Not content with that, the Queen sent him her personal thanks, congratulated him upon his great success, and presented him with a valuable gift with the Royal monogram set in brilliants. In view of an important and interesting event which they saw in the immediate future, they might venture to hope that that gift was destined to become an heirloom in the family of Stanley. Mr. Stanley's marvellous courage, vigour, and endurance had enabled him, as regarded those geographical traditions and legends which had come to us from prehistoric times, and yet were after all traditions and legends, to clothe them with a good deal of life, truth, and actuality, which had elevated them into the region of historic facts, and

had made the world at large Mr. Stanley's debtor. He ventured to say that Mr. Stanley had discovered a new continent for the world, and he had opened up that continent to the agencies and resources of civilisation, and in opening it up to those agencies and resources he had given a death-blow to the barbarous customs inseparable from slavery and the slave trade. With those few remarks of an introductory nature he begged now to invite Mr. Stanley to deliver his address.

Mr. STANLEY then addressed the meeting and said: It was to a Scotchman that they were indebted for that beautiful and inspiring picture of a governor at bay in the far-off Soudan, defying the victorious Mahdists, and fighting bravely inch by inch for the land which he had been appointed to rule by General Gordon. That governor was described as a tall military figure, of severe aspect, a rigid moralist, of inflexible will and scientific attainments, and his name was Emin. That picture became impressed upon all their imaginations; and when another Scotchman of Argyleshire asked him if he would be willing to lead an expedition to the relief of Emin, the image of the brave governor fighting against immense odds in the remote heart of Africa, straitened in means, environed by dangers, isolated from his kind, filled his mind, and in a reckless mood he answered in the affirmative. And forthwith came appeals from the brave, adventurous, and young in these islands that he would be pleased to associate them with him in the enterprise of relief. They vowed strictest fidelity, obedience to any terms, and the utmost devotion, and from among a host of applicants Major Barttelot, of the 7th Fusiliers; Mr. Jameson, a rich young civilian; Lieutenant Stairs, of the Royal Engineers; Captain Nelson, of Methuen's Light Horse; Surgeon Parke, of the Medical Department; Messrs. Jephson, Troup, Ward, and Bonny, were enrolled as members of the expedition to relieve Emin Pasha, Governor of Equatoria. Had their means only been equal to their opportunities, they might have emptied the barracks, the colleges, the public schools, he might almost say the nurseries, so great was the number of applications to join in this adventurous quest. The route resolved upon was that from Zanzibar westward by the south end of Lake Victoria to the Albert; but about thirteen days before they sailed the King of the Belgians, through his generous offers of assistance, induced them to change their plans and to choose the Congo route, which had the advantage of being about five hundred miles shorter land journey. As regards the choice of route, he said with the utmost deliberation that had they been sent out seven months previous to January, 1887, the Congo route would have been infinitely the preferable; but it happened that there were changes transpiring, even at their departure, of which they knew not, which converted the region they were fated to travel over into hungry forests, in traversing which they were subjected to the most hideous sufferings and privations that ever African caravan underwent. In all his lectures and speeches on Africa he had done his best to remind the audiences of the services of those to whom they ought to be grateful. If he employed the personal pronoun they were to understand that his companions, white and black, were always included, and especially the British officers and Zanzibaris, without whom no relief or rescue of Emin would have been possible. But there was one person whom he had not yet mentioned in connection with their expedition, about whose services he had been singularly silent. Through a strange oversight he had neglected to say a word about Sir William Mackinnon and his associates, who contributed to the fund about £16,000, which made relief possible. Three-fourths of the contributors were Scotchmen. He should not omit to mention, amongst others, the late Mr. J. F. Hutton, of Manchester, and the son of Sir William Mackinnon, who worked with might and main at Zanzibar to equip and prepare the expedition in time. Four days after their arrival—February 25, 1887—they set sail for the mouth of the Congo River. They moved up the river with 680 men and about 160 tons of cargo. The entire force consisted of 11 whites, 623 Zanzibaris, 62 Soudanese, 13 Somalis, and two Swazis. The chief of the Zanzibaris was, he thought, present with them that evening. Accompanying them were Tippoo Tib and 96 of his followers, to whom free board and passage from Zanzibar to Stanley Falls were granted, in consideration of his promising to supply the expedition with 600 carriers to assist in the transport of ammunition to the Albert Nyanza for the beleaguered governor of the Equatorial Province. He need not detain them with an account of the march to Stanley Pool, 340 miles from the sea, nor of the voyage of over 1,000 miles up the Upper Congo to a place called Yambuya, on the Aruwimi River, because they ought to have a fairish idea of the scenery and other things from former addresses of his delivered in Manchester. Speaking of the latest news of Emin Pasha's position, Mr. Stanley said he met Dr. Junker at Cairo, and he made some notes of what Dr. Junker said about the Pasha. His notes were: "Emin Pasha very short-sighted, great linguist, no fighter, but good administrator. Is very prudent. Doubtful about seven years' pay due to him." The last news was very discouraging. The last news received before starting from London from the Foreign Office was that Emin was imploring help before being overwhelmed, that he was debating with himself as to which route would be best for him to retreat by, but that, prevailed upon by Mr. Mackay, he had at last become convinced that it would be best to remain until he received orders from his Government. That the public received later letters giving different views of his position, after the expedition departed from England, did not alter the conditions under which they set out. Having despatched couriers from Zanzibar overland to announce their coming to Emin, with indications of the point of their emergence from the west, they were strengthened in their purpose by a belief that a grateful Pasha, with a grateful army, would be anxiously expecting them, with their minds made up either to renew the struggle against Mahdism or to instantly retreat with them towards civilisation. In debating with himself as to what was the extent of the forest they were about to enter, as to what was its extent inland from the Congo, it never dawned upon his mind that they would find at that altitude a duplicate of the Amazon forest, for in 1886 the Arabs had spread about the rumour that behind the forest there was a great extent of grass land with cattle. That suggested to his mind that two weeks, or at most a month's march, would take them to a lofty pastoral upland similar to that which existed between Lake Victoria and Lake Albert Edward, when, of course, having found a good road in the open country, they could swing along at the rate of ten or fifteen miles per day. They therefore entered the forest with confidence—forty pioneers in front to clear a path through the obstructions, praying that God and good fortune would attend them, and believing implicitly that their errand was noble and commendable. Meantime, with an instinctive sense that the Albert Nyanza would never approach nearer to them, and that the object of the expedition would ever remain unattainable unless they employed physical and mental powers to shorten the distance, they marched on, solemn as the prospect was before them. From morning till night they went forward unceasingly. Step by step they went on, penetrating deeper and deeper into that strange conservatory of nature, the inner womb of a true tropical forest.* It was only

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* Mr. Stanley gives a description of the forest in "Darkest Africa," vol. ii., pp. 69 &c., as follows: "Now let us look at this great forest, not for a scientific analysis of its woods and productions, but to get a real idea of what it is like It covers such a vast area, it is so varied and yet so uniform in its features, that it would require many books to treat of it properly. Nay, if we regard it too closely, a legion of specialists would be needed. We have no time to examine the buds and the flowers or the fruit, and the many marvels of vegetation, or to regard the fine differences between bark and leaf in the various towering trees around us, or to compare the different exudations in the viscous or vitrified gums, or which drip in milky tears or amber globules, or opaline pastils, or to observe the industrious ants which ascend and descend up and down the tree shafts, whose deep wrinkles of bark are as valleys and ridges to the insect armies, or to wait for the furious struggle which will surely ensue between them and yonder army of red ants. Nor at this time do we care to probe into that mighty mass of dead tree, brown and porous as a sponge, for already it is a mere semblance of a prostrate log. Within it is alive with minute tribes. It would charm an entomologist. Put your ear to it, and you hear a distinct murmurous hum. It is the stir and movement of insect life in many forms, matchless in size, glorious in colour, radiant in livery, rejoicing in their occupations, exultant in their fierce but brief life, most insatiate of their kind, ravaging, foraging, fighting, destroying, building, and swarming everywhere and exploring everything. Lean but your hand on a tree, measure but your length on the ground, seat yourself on a fallen branch, and you will then understand what venom, fury, voracity, and activity breathes around you. Open your notebook, the page attracts a dozen butterflies, a honey-bee hovers over your hand; other forms of bees dash for your eyes; a wasp buzzes in your ear, a huge hornet menaces your face, an army of pismires come marching to your feet. Some are already crawling up, and will presently be digging their scissors-like mandibles in your neck. Woe! woe!

"And yet it is all beautiful—but there must be no sitting or lying down on this seething earth. It is not like your pine groves and your dainty woods in England. It is a tropic world, and to enjoy it you must keep slowly moving

"Imagine the whole of France and the Iberian peninsula closely packed with trees varying from 20 to 180 feet high, whose crowns of foliage interlace and prevent any view of sky and sun, and each tree from a few inches to four feet in diameter. Then from tree to tree run cables from two inches to fifteen inches in diameter, up and down in loops and festoons and W's and badly-formed M's; fold them round the trees in great tight coils, until they have run up the entire rarely and with great difficulty that the sunlight succeeded in penetrating the impervious foliage above their heads. After a month's unbroken march they halted a day for rest, and they attempted to question the natives, who had hitherto roughly eluded all efforts to obtain intelligence. They asked them if there were grass lands on the north, east, or south, but the people had never heard of them. This information greatly discouraged the men, and many of them deserted, only, however, to fall victims to hunger or the spears of the inhabitants of the forest. The people had little more than a legendary lore, and in their minds dimly floated the memories of a land that grew darker and darker as the end drew near, and the place was where

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height, like endless anacondas ; let them flower and leaf luxuriantly, and mix up above with the foliage of the trees to hide the sun ; then from the highest branches let fall the ends of the cables reaching near to the ground by hundreds with frayed extremities, for these represent the air roots of the Epiphytes ; let slender cords hang down also in tassels, with open thread-work at the ends. Work others through and through these as confusedly as possible, and pendant from branch to branch—with absolute disregard of material, and at every fork and on every horizontal branch plant cabbage-like lichens of the largest kind, and broad spear-leaved plants—these would represent the elephant-eared plant—and orchids and clusters of vegetable marvels, and a drapery of delicate ferns which abound. Now cover tree, branch, twig, and creeper with a thick moss like a green fur. Where the forest is compact as described above, we may not do more than cover the ground closely with a thick crop of phrynia, amoma, and dwarf bush; but if the lightning, as frequently happens, has severed the crown of a proud tree, and let in the sunlight, or split a giant down to its roots, or scorched it dead, or a tornado has been uprooting a few trees, then the race for air and light has caused a multitude of baby trees to rush upward—crowded, crushing, and treading upon and strangling one another, until the whole is one impervious bush.

"But the average forest is a mixture of these scenes. There will probably be groups of fifty trees standing like columns of a cathedral, grey and solemn in the twilight, and in the midst there will be a naked and gaunt patriarch, bleached white, and around it will have grown a young community, each young tree clambering upward to become heir to the area of light and sunshine once occupied by the sire. The law of primogeniture reigns here also.

"There is also death from wounds, sickness, decay, hereditary disease and old age, and various accidents thinning the forest, removing the unfit, the weakly, the unadaptable, as among humanity. Let us suppose a tall chief among the giants, like an insolent son of Anak. By a head he lifts himself above his fellows—the monarch of all he surveys ; but his pride attracts the lightning, and he becomes shivered to the roots, he topples, declines, and wounds half a dozen other trees in his fall. This is why we see so many tumorous excrescences, great goitrous swellings, and deformed trunks. The parasites again have frequently been outlived by the trees they had half strangled, and the deep marks of their forceful pressure may be traced up to the forks. Some have sickened by intense rivalry of other kinds, and have perished at an immature age : some have grown with a deep crook in their stems, by a prostrate log which had fallen and pressed them obliquely. Some have been injured by branches, fallen during a storm, and dwarfed untimely. Some have been gnawed by rodents, or have been sprained by elephants leaning on them to rub their prurient hides, and ants of all kinds have done infinite mischief. Some have been pecked at by birds, until we see ulcerous sores exuding great globules of gum, and frequently tall and short nomads have tried their axes, spears, and knives on the trees, and hence we see that decay and death are busy here as with us.

"To complete the mental picture of this ruthless forest, the ground should be strewn thickly with half-formed humus of rotting twigs, leaves, branches ; every few yards there should be a prostrate giant, a reeking compost of rotten fibres, and departed generations of insects, and colonies of ants, half veiled with masses of vines and shrouded by the leafage of a multitude of baby saplings, lengthy briars and calamus in many fathom lengths, and every mile or so there should be muddy streams, stagnant creeks, and shallow pools, green with duckweed, leaves of lotus and lilies, and a greasy green scum composed of millions of finite growths. Then people this vast region of woods with numberless fragments of tribes, who are at war with each other and who live apart from ten to fifty miles in the midst of a prostrate forest, amongst whose ruins they have planted the plantain, banana, manioc, beans, tobacco, colocassia, gourds, melons, &c., and who, in order to make their villages inaccessible, have resorted to every means of defence suggested to wild men by the nature of their lives. They have planted skewers along their paths, and cunningly hidden them under an apparently stray leaf, or on the lee side of a log, by striding over which the naked foot is pierced, and the intruder is either killed from the poison smeared on the tops of the skewers or lamed for months. They have piled up branches, and have formed abattis of great trees, and they lie in wait behind with sheaves of poisoned arrows, wooden spears hardened in fire, and smeared with poison.

"The primeval forest—that is, that old growth untouched by man, and left since the earliest time to thrive and die, one age after another—is easily distinguishable from that part which at some time or another afforded shelter for man. The trees are taller and straighter, and of more colossal girth. It has frequently glades presenting little difficulty for travel, the invariable obstructions being the arum, phrynia, and amoma. The ground is firmer and more compact, and the favourite camping ground for the pigmy nomads are located in such places. When the plants and small bushes are cut down, we have an airy, sylvan, and cool temple, delightful for a dwelling."

the great serpent lay supine and coiled round the earth. Mr. Stanley described in picturesque detail the character of the march through the forest, his numbers growing smaller and smaller, with starvation all the time in view. Sometimes the men disappeared in twos, or threes, or sixes, some to reach Yambuya, and frighten the officers there with their tales of woe, some to be spear-thrust, some even to be carved for the cannibal feast. The march was terrible through disease, for the smallest thing would start an ulcer. Then the men were often reckless in regard to the provisions, ten days' food being eaten in three or four days. They urged the men to take care of their rations, and told them the only remedy was to press on and on through the accursed wilderness; and the day came at last, after infinite patience, when, well-nigh exhausted with their travels, they reached a veritable land of plenty. There they rested for thirteen days to recuperate and repair the waste of the wilderness. Some natives told them they had seen the grass land for the first time five days' journey further east, and this revived the people, but it was twelve days before the expedition finally emerged out of the forest. On the 160th day after leaving the rear column at Yambuya they filed out of the gloom into the light of broad day, into one of the loveliest lands they had ever seen. Out of 389 men only 173 remained, and out of 216 they had left behind they might pick up about 50, or perhaps less. The nearer they got to the Lake Albert the more warlike the natives seemed to grow. They had to meet new tribes or sections of tribes, each of which imagined it was able to effect what its friends had been unable to do. Despite the most frantic efforts of these, they finally reached, on the 13th December, 1887, the tableland, 5,200 feet above the sea, and looked down on Lake Albert about 2,300 feet below, and just six miles away. The hope that sustained them during their journey from Zanzibar to Lake Albert was that Emin Pasha would proceed in his steamer to the south end of the lake, and warn the natives that he expected some friends from the west; but on their arrival at the edge of the lake they were sorely disappointed to find that for ten years no white man or steamer had been seen on it, and yet they had arrived on the 14th December, one day previous to that on which Emin said he would expect them. After staying two days, and perceiving that no expedition could subsist near Lake Albert, as the shores were occupied by only four fishing villages, they turned sharply about, and, returning, built Fort Bodo. The fort having been completed, and about ten acres of ground cleared, they put in corn, beans, and tobacco, and set out a second time for Lake Albert on the 2nd March, 1888; but on this occasion they conveyed their steel boat which had been made for them in London. On the 20th of April they received a letter from Emin, dated the 25th March, which asked them to stay at Kavalli until he could come to them. They did not wait to do that, but Jephson got a good boat's crew and went in the steel boat in quest of Emin, for had he not written to *Petermann's Mittheilungen*—"If Stanley does not come soon we are lost." He (Mr. Stanley) gave that as an instance of vagary in human nature. Another letter from Emin to his Government contained the following: "Help us quickly or we perish." But after the expedition had started inland he sent a letter to a friend which read proudly thus: "If, however, the people of Great Britain think that as soon as a Stanley or a Thomson comes I shall return with them, they greatly err. For twelve long years I have striven and toiled and sown the seeds for future harvest, laid the foundation-stone for future buildings. Shall I now give up the work because the way may seem open to the coast? Never!" Another instance of that peculiar vagary of human nature was that Emin signed an engagement to enter the German service on February 3, but continued to hold out inducements to the British Company for a month longer that he would serve them. A few days after Mr. Jephson's departure a steamer called the Khedive made her appearance, and in the dusk, amid a wild scene of excitement, Emin Pasha, Captain Casati, and a few Egyptian officers were conducted from the beach to his tent. Until the 25th May their respective camps were close together. They met daily and chatted about various things, and naturally the topic as to whether Emin would stay in Equatoria or accompany him to the coast came up frequently for discussion; but from the beginning to the end of their meetings he was only conscious that he was profoundly ignorant of Emin's intentions. On some days, after a friendly dinner, and when they might have opened a bottle of champagne, Emin held out hopes that he would accompany him; but on the day following he would say, "No; if my people go, I go; if they stay, I stay." For ten days he (Mr. Stanley) assented to that, and listened, but it became impressed upon his mind, or rather he surmised it, that Emin had a personal objection to go to Egypt, because he might be shelved, and his life would be wasted in a Cairo coffee-house. What his views were he could not gather in the least, because the impression of one day was displaced by that of the next, and his real opinions upon any topic were too transient to base conclusions upon. Thinking Emin's objections applied only to leaving Africa, he (Mr. Stanley) finally said to him, after a fortnight, "I see, Pasha, you don't like the idea of going to Egypt. What do you say to a continuation of your appointment here as governor, with the rank of general?" "How?" "Your first duty, of course, is to the Khedive, because you are an officer of his. He suggested that you should retire with me to Egypt; but you evidently don't admire the idea, and from what I gather from you, your troops entertain the same objection. As I only came to serve you, it is for you to state whether an appointment here would best meet your wishes. In the event of your resolving to stay, I have been requested to offer you the post of governor here, with the rank of general, a pay of £1,500 a year, and a subsidy of £12,000." "Ah! indeed; under whom?" "Under Leopold II., King of the Belgians." He replied, "No, Mr. Stanley; I have served the crescent flag for thirty years, and I cannot change it for the blue flag and the golden star all at once." "Well spoken, Pasha," was his reply; "you have quite made up your mind on the subject?" "Quite, and we will say no more about it." "Very good, Pasha. Now, listen. I have one more proposal to make to you. Cast your eyes down this letter which the Foreign Office handed to me among other papers before I left England, in order that I might thoroughly understand the person whom I was seeking. In this letter you offer your province and your services to the British." He replied, "They had no right to publish my private letters. It is a shame!" "I beg your pardon, Pasha. These letters are not published. They are printed for those they are intended for, and it was thought necessary that I should be enlightened on the object of the expedition. Assuming that you are certain to decline the Egyptian aid which we have brought to you, and that you equally decline the offer of King Leopold, I have another proposition to make to you, entirely on my own responsibility." "What is that?" he asked. "That you take service with the British Company, as foreshadowed in your letter to Sir John Kirk. Remove from the province, and accompany me to the north-east of Victoria Nyanza. I will undertake that the natives shall receive you and your troops. We shall assist you to build a fort or two, and after seeing you all comfortable and provided for I shall hasten to the coast, send you a caravan with further supplies, and proceed to England to form a company which shall accept you and your troops with the same pay and rank." "Ah! that is something like an offer. Indeed, I am most grateful, because it is precisely what I would wish, and it will meet every objection, for my troops, so far as I know, dislike going to Egypt, and if they are contented I shall be most pleased. But can you guarantee this?" "I can guarantee nothing, but I will do my best to make the project a success." "Well, I am delighted with it. If you will let Dr. Parke stay with me as witness to my troops, it will be better evidence of the truth of what I say." "Dr. Parke is our only surgeon, and we require him every day. If it is only a witness you want, why not Mr. Jephson?" "Very well; let it be Mr. Jephson. He would be able to report what he has seen." A few days after that conversation the Pasha sent the commander of his troops and head clerk to him (Mr. Stanley), and they could imagine his astonishment when, as soon as they were seated, they began to pour forth the most violent abuse of the Pasha. They declared he was the most consummate "fibber" they had ever known. Considering what fibbers the Arabs were, he thought they were greatly exaggerating. He asked them if the Pasha was aware of their sentiments. "Oh, no," they replied; "he would cut our heads off if he knew we were telling you this. But we all want to leave this accursed country. We are tired of our life here. The Pasha will perhaps tell you differently, but he has the most crooked ways, and you cannot believe a word he says. All he cares for are beetles and butterflies." The officers continued in that strain for quite an hour. All this made no more impression upon him than it would upon them, further than making him think that if such sentiments were general in those provinces the condition of things could not be a very happy one. About the third week of their stay with Emin the major and officers of the only reliable battalion left were formally introduced to him. Agreeably to a suggestion of his, Emin turned to the commanding major and said, pleadingly, "Now promise me, please, before Mr. Stanley, that you will give me the forty soldiers necessary to garrison this station." The first battalion had been in revolt eighteen months before, and the Pasha was a fugitive from their vengeance, and here, in his (Mr. Stanley's) face, was the Pasha pleading mildly to the only loyal battalion, as he called it, left to him. And yet externally the Pasha was still the governor, obeyed and treated as his rank and his authority deserved, but underneath treason and rebellion fermented. Emin Pasha was either unconscious of it, or dissembled so well that he (Mr. Stanley) could only venture to say to himself that the thing was very extraordinary and quite unlike the state of things they had pictured in England. Towards the latter part of May they left Emin and Mr. Jephson, and up to the last moment the Zanzibaris thought that Emin was a great and powerful governor. His thoughts were busy trying to piece this thing and that together in order to attain to a reasonable solution of many things. Nevertheless the Pasha impressed them as an amiable and accomplished gentleman. When they set out to hunt up the rear column they firmly believed that on their return they would find the Egyptians collected on the little island ready for departure homeward, or the Pasha firmly established under more promising auspices, with his faithful Soudanese troops around him. On arriving at Fort Bodo he found that Lieutenant Stairs had returned with the remnant of the contingent left with the Manyuema. Invalid farming with the Manyuema had turned out to be almost as bad as baby farming in England in the olden time. After eight days' rest they proceeded on the back trail, and on the eighty-second day after parting with Emin they appeared before Banalya, a stockaded village about ninety miles east of Yambuya. They there learnt that instead of following the track of the vanguard the officers of the rear column had elected to wait at Yambuya for the promised contingent from Tippoo Tib, who had induced them by repeated promises to carry out his agreement, to delay their departure. Ten months after the day on which they were to have left Yambuya they set out, but in the meantime 100 people of the rear column had perished, and 33 had been left behind. Mr. Jameson had travelled 1,200 miles to obtain the Manyuema contingent, and Major Barttelot had personally travelled 800 miles. On the second day after the major's arrival at Banalya from paying the eighth visit to Stanley Falls, he was assassinated by the very people he had travelled so far and sacrificed so much to obtain. On the 20th December, 1888, they burst out of the forest once more on the edge of the plantations of Fort Bodo, and by nine o'clock the volleys of the rifles woke up the garrison at the fort to the fact that after 188 days' absence from them the expedition had returned with all that was left of the rear column. But there was one great mystery yet remaining. Mr. Jephson had promised to visit Fort Bodo within two months of their departure from Lake Albert—say about the middle of August. It was now about the middle of December, and nothing had been heard of him. But the cure for all doubt and misery was action, and therefore they could not remain passive at Fort Bodo. They took three days' rest only, and then set out for Lake Albert for the third time on the 17th of January of last year. When they got within a day's march of the lake a packet of letters was placed in his hand by a native, stating that Jephson and Emin Pasha were prisoners; that they had been arrested by the revolted troops of the province. The Pasha also seemed to think that nothing could be worse than the outlook for him, and he specially recommended his child to Mr. Stanley's care. He picked up a crumb of comfort from the fact that Mr. Jephson stated that he could come to him if he knew of his arrival, which he decided was the best thing he could do. Accordingly an imperative message was sent to Jephson not to debate, but to act, and like a faithful and obedient officer he stepped into a canoe, and came in time for him to congratulate him on his narrow escape from becoming a footman of the Emperor of the Soudan. He asked Mr. Jephson if the Pasha had decided what to do. "To tell you the truth," Jephson said, "I know no more what the Pasha intends doing than I did nine months ago." He next asked who was going to take charge of his ammunition, because it had not been brought for the revolted soldiers, but for the governor, and if the governor was a prisoner and could not use it, he (Mr. Stanley) would have to consider whether he should not blow up the store for him. It was not long before the mystery, which had struck him before, was cleared up, for it appeared that the Pasha had been deceived by the Egyptian officers. Some years before it was reported to Gordon that immediately communication with Khartoum was suspended for a time the discipline had become such as to cause anxiety. In 1886 the Pasha had fled from the first battalion, and until his imprudent resolve to take Jephson amongst the rebels he had held no communication with them. The second battalion only performed such service as it pleased them, while the irregulars followed the example of the majority. All this was clear from what Mr. Jephson reported to him, and they would remember that the Pasha had said, "When you return, Jephson will be able to report to you what he has seen." It was corroborated by the strange request of the Pasha in May, 1888: "If you please, now promise me before Mr. Stanley that you will give me forty soldiers, who, he says, are necessary for this station." He (Mr. Stanley) resolved to try once more and ascertain what measures agreeable to the Pasha he should take. Did he wish an armed rescue, or was it possible for him to do anything, such as seizing a steamer and following Jephson, or could he march out from where he was a prisoner and meet him (Mr. Stanley), or had he quite made up his mind to remain a prisoner until the rebels should dispose of him? Any way and every way, if Emin could only express a definite wish, he (Mr. Stanley) would be bound to help him to the uttermost. He wrote Emin a most scrupulously polite, Chesterfieldian letter to that effect, because he was warned that the Pasha was morbidly sensitive. While this letter was being conveyed on the lake matters were settled in quite an inconceivable fashion. The rebel officers had heard of their coming with Maxims and breech-loading rifles. They were frightened, and hastened to the Pasha to ask his pardon and to beg to reinstate him in his governorship. The pardon was given, but he declined the other request. They asked the Pasha to accompany them on a visit to him (Mr. Stanley). That was done, and on the 13th February last year the two steamers had approached their camp, and two days later they were in the camp. According to the Pasha, the Mahdist invasion and the capture of four stations and the massacre of the rebel officers had cowed them; they were repentant, and willing at once to depart to Egypt to greet their great Government. The officers now asked only for time to assemble their families. Agreeably to the Pasha's request, reasonable time was granted, and the officers departed. The governor thought twenty days would be sufficient; Mr. Stanley granted a month. At the end of the month the Pasha requested another extension, and Mr. Stanley allowed a fortnight more. Finally, at the end of six weeks, not one officer of the rebel party having made his appearance, they broke up their camp and commenced their journey home with 570 refugees. On the second day an illness prostrated him, and this gave the rebel officers twenty days' grace, yet, after seventy-two days spent near the lake, only one person had availed himself of their offer. On the seventy-third day four soldiers brought a message stating that the rebels had formed themselves into two parties. The first had seized all the ammunition from the second and fled. The second party, unable to muster resolution to follow Mr. Stanley's expedition, had preferred to remain behind to curse the first party and their following. What the end of those misguided and unprincipled men might be no person knew outside that unhappy region—whether the second party preferred to follow the first party and submit to the chief of the first party, or his superior in fraud and dissimulation, or whether in attempting to follow he was overtaken and killed, could only be idle speculation. Their fate proved the truth of the Greek saying, "Whom the gods wish to destroy they first make blind," for such blind and unreasoning specimens of humanity he never met with in the whole course of his experience. The expedition departed finally from that region on the 8th May last year, and by the 5th December, in a period of 210 days, they had marched 1,400 miles, and out of 570 refugees they succeeded in escorting Emin Pasha, Captain Casati, Signor Marco, and 291 of their followers safe to the Indian Ocean. They knew also that a few days before reaching the coast they were welcomed and most hospitably entertained by the German officers in East Africa, and that on the very first evening of Emin's introduction to his dear countrymen a banquet given in their honour terminated in an unfortunate accident which well-nigh proved fatal to Emin; but they would be glad to learn, however, that since the latter part of February Emin Pasha had been busy writing his book and arranging his entomological and ornithological collections, and had again started for the land lying between the Tanganyika and the Victoria Nyanza to annex those interesting regions in the name of the Imperial German Government. During the wanderings of his expedition from Banana Point, on the Atlantic, to Bagamoyo, on the Indian Ocean, which lasted 987 days, they travelled 6,000 miles, 1,670 of these miles measuring their tramps to and fro in the twilight of the great Central African forest. Let him show them a glimpse of it. One of their officers always spoke of it as a bush—but he had been in New Zealand. It was not a bush, or a jungle, or any kind of tree-covered tract such as was known to people in temperate climates. It was a forest, extending to 224 million acres in extent, four times the size of Great Britain, crowded with colossal trees, mainly from 1ft. to 5ft. in diameter, 200ft. in height, with very straight and long glossy foliage so interlaced that the glare of the tropical sun was quite shut out. Each tree was seemingly lashed to the other by endless lengths of cables, ranging from long thread-like creepers to others of the thickness of the old hempen hawsers used on board line-of-battle ships. The undergrowth was so close that one fancied that he could travel better on the top than underneath. As to the members of the expedition, while they fancied themselves the only inhabitants, the foliage above might be haunted by birds of gay plumage, such as the parrot, the cockatoo, and sun birds; divers and kingfishers might at the same time be sitting by the river watching for their finny prey; a family of chimpanzees reposing in connubial bliss; not far off, tribes of small monkeys engaged in gymnastics; a troop of monstrous elephants, a herd of buffaloes, and frequently a ground antelope might be seen, the latter lifting itself from the spot where a man was going to place his foot. To get a broader view of this forest they must think of the great rivers by which it was traversed. Then they must people this great tract with small tribes dwelling amid the *debris* and wreck of mighty woods, from ten to thirty miles apart, in absolute ignorance that there could exist any other world than their own. These people were possessed of such a mania for any kind of animal food that when any member of the expedition died he was buried in one of the rivers lest the body should be exhumed. In the eastern part of the forest he found several tribes of primeval African men. At the base of the Ruwenzori, or the Mountains of the Moon, they met two distinct tribes—one very degraded specimen, with ferrety eyes close set, and excessively prognathous jaw, more nearly approaching to what one might call the simian than one might suppose to be possible and yet to be thoroughly human; and the other a handsome type with open, innocent features—very prepossessing. They had considerable experience of both of them. They were wonderfully quick with their weapons, and wounded to death several of his followers. Their custom was to shoot at sight; and their craft, quick sight and correct aim, and general expertness, added to their poisoned arrows, made them no despicable antagonists. When they were successful in the chase or in trapping, a fair trade was made between the pigmies and a brown-bodied tribe living to the east, who had sinewy, sturdy figures. Many of the little people were as perfect from the knees upwards as a sculptor would desire, but the lower limbs were weak and badly-shaped. They were quick and intelligent, capable of deep affection and gratitude, and those whom the members of the expedition trained showed remarkable industry and patience. One old woman, 4ft. 2in. in height, and possibly, as they thought at first, the ugliest little mortal they had in their camp, exhibited most wonderful endurance. She seemed always loaded like a camel, as she followed the caravan from camp to camp. He often had to reduce her load that threatened to bury her, as it consisted of cooking pots, stools, porridge pans, kettles, bananas, native ropes, ironware, and what not. Everything was placed in her hamper, as if her strength was without limit. Towards the latter part of their acquaintance with her he was able to make her smile once, but it had been terribly hard work, as she was an inveterate scold. By action and by look she seemed to say, "You may beat me to pulp, you may load me till you smother me, you may work my fingers to the bone, you may starve me, but, thank goodness, I can scold, and I will scold till I drop." They had a pigmy boy of eighteen who worked with a zeal that he did not think possible outside civilisation. Time was too precious for him to waste in talk. On the march he held his place near the van. When they reached camp he literally rushed to collect fuel to make his master's fire. His mind seemed ever concentrated on work, and yet he was only 4ft. high. He once stopped him to ask his name, and his face seemed to say, "Please, don't stop me; I must finish my task," and yet he never heard that boy's voice, and he was not dumb. Another was a young woman, of whom he could honestly say that she was virtuous and modest, though half naked. It was no use for any stalwart Zanzibari to cast eyes at her. She resolved that she had duties to perform, and she did them without deigning to notice the love-sick swains of the camp. Her master's tea or coffee were far too important to be neglected. She required no enjoyment. Her master's pleasures were to her unspeakable pleasures. The picture of this young naked pigmy dame abjuring privileges and rendering due fidelity and simple devotedness because it was her nature to would long remain in his mind as one of many pleasant things to remember. He had no time to touch upon any of the more important features of the grass land, except upon the most singular of all, the Ruwenzori, or Mountains of the Moon, from which the melting snows filled the rivers that flowed into Lake Albert. How these immense snow mountains could have remained so long hidden from intelligent explorers was a mystery. According to every ancient account, from Homer down to the beginning of the present century, they had been located faithfully enough for all practical purposes by tradition, but, though during the last twenty-five years Sir S. Baker and a number of travellers had been within fifty miles of them, they had remained unseen. But suddenly, before a thousand pair of eyes, after the expedition had rested nearly a month at one camp, the snow range was seen in all its splendour. If they could imagine an island 100 miles long and half as many wide suddenly rising into view at the mouth of the Mersey, over 18,000ft. in height above the sea, clothed half way up with primeval forest, the other portion capped with pure white snow, they would understand something of the awe and the delight with which the members of the expedition gazed upon this wonderful revelation of the unknown. Perhaps the Bernese Oberland gave the best idea of the picture. The valley west of it, from which the Semliki winded, embraced about 3,000 square miles, and was one of the most prolific valleys in the world. Its central portion was covered by a very large forest, in which the natives had made clearings, and in which there were large quantities of luscious fruits. Battalions might easily have been supplied with provisions, so that for once Africa was seen in perfection by the long-enduring column of wanderers. To the north of the valley was the Lake Albert* in the midst of a wide grassy plain which occupied what was once a spacious inland sea. Until within the last ten years these plains were remarkable for hundreds of herds of fawn-coloured cattle, but with the guns given them by deserters from Emin Pasha's provinces, the people had almost exterminated the cattle, and the pastoral tribes which possessed the land had been broken up. Once the line of longitude 30 was crossed they were out of the zone of perpetual rains, and the region eastward, as far as the Indian Sea, was subject to six months' drought and six months' rain. Most imperfect the audience might deem the address, but his aim had been mainly to rouse their curiosity. The books that would be published within the year would satisfy their natural desire to know particulars about Emin and his provinces, and give sufficient details of the strange new lands traversed by the expedition. Since he touched the Indian Ocean last December he had been hungering for his rest and his holiday. He thought, however, that the Athenæum and the Geographical Society of Manchester, having welcomed him in years past, had an equal right to a visit from him as other societies in Scotland. It was a matter of deep regret to him that he had been unable to give them something more worthy of the sincere friendship and admiration he entertained for many friends of his in the city of Manchester.

The Rev. S. A. Steinthal, Chairman of the Council of the Manchester Geographical Society, proposed the following resolution:—

"This meeting, representing the Manchester Athenæum and the Manchester Geographical Society, warmly welcomes Mr. Stanley to this city; congratulates him on the successful accomplishment of his journey through Central Africa, after unexampled difficulty, privation, and peril; and recognises that by his courage, endurance, and practical wisdom he has been enabled to make invaluable contributions to geographical research, and to the cause of humanity and civilisation."

Mr. Henry Lee, Vice President of the Society, and President of the Manchester Chamber of Commerce, in seconding the motion, spoke of the valuable services Mr. Stanley had rendered to the commercial interests of the city.

The motion was enthusiastically carried.

Mr. Stanley, in reply, said: I have been attempting for the last one hour and twenty minutes to tire you to sleep. To-morrow

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*Lake Albert is to the *north*. If he really meant *south*, then the Lake Albert Edward, which he himself named, would be the one meant, but most likely he meant north.

I hope, with the permission of the good Mayor of Manchester, that I shall endeavour to excite the vigorous commercial spirit of this city. But in the meantime, as it is drawing now to midnight, and the carriages have been ordered at a quarter to ten, I will dismiss you with my benediction and my thanks.

This concluded the proceedings.

A meeting of the City Council was held on Saturday morning, June 22nd, 1890, to which a deputation from the Manchester Geographical Society was invited, when the honorary freedom of the city of Manchester was conferred on Mr. H. M. Stanley. A special meeting of the City Council was held for the purpose in the Council Chamber, to which, besides the members of the Council, a number of privileged persons were admitted. There was a full public gallery also on the occasion. The aldermen and councillors were nearly all present. Amongst others in the room were Mr. O. Heywood (the first honorary freeman of the city), Sir J. C. Lee, Mr. Henry Lee (president of the Chamber of Commerce), Mr. T. R. Wilkinson (treasurer of the Society), the Rev. S. A. Steinthal (chairman of the Council), Mr. S. L. Keymer (vice-chairman), Mr. Sowerbutts (secretary), and Mr. W. Pollitt. The Mayoral chair was set upon a raised platform, prettily decorated with flowers and plants and covered with red cloth. On this platform Mr. Oliver Heywood, the Mayoress, and members of the Mayor's family, were accommodated with seats. The Mayor (Mr. Alderman Mark) was in full official robes, as was also the Town Clerk (Mr. W. H. Talbot).

The MAYOR announced that they were met to confirm the proceedings of the special meeting of the Council on the 18th June, when it was decided to pass the following resolution:—

"That this Council desire to express their sense of the distinguished services rendered by Mr. Henry Morton Stanley to the interests of civilisation and commerce by the explorations in Africa, which have made his name illustrious. They also desire to record their admiration of the fortitude, skill, and heroism displayed by Mr. Stanley throughout his arduous and perilous enterprises, and to congratulate him upon his return in safety to this country after so long an absence. The Council, in recognition of these eminent services, do hereby, in pursuance of 'The Honorary Freedom of Boroughs Act, 1885,' confer upon the said Henry Morton Stanley the honorary freedom of the city of Manchester, and hereby admit him to be an honorary freeman of the city of Manchester accordingly." He now moved that the proceedings be approved.

Alderman Sir JOHN HARWOOD seconded the resolution, and it was adopted unanimously.

Members of the Council and visitors then rose, and the Mayor, the Deputy-Mayor (Sir John Harwood), Mr. Alderman Heywood, and the Town Clerk introduced Mr. Stanley to the room, when he was greeted with cheers. Mr. Stanley then took his seat, a black youth who accompanies him being seated behind him, wearing a red fez.

The TOWN CLERK read the resolution adopted at the special meeting referred to.

The MAYOR, addressing Mr. Stanley, then said: I esteem it a great privilege that it devolves upon me as Mayor to present to you, on behalf of my fellow-citizens, the honorary freedom of the city of Manchester, as a token of our high appreciation of your distinguished services in your explorations in Central Africa. Although no words of mine can give additional lustre to your great achievements, the occasion requires that I should briefly supplement the resolution which has been inscribed

upon the roll conferring the freedom of the city. In the first place I would express the hope that it may be enhanced in your estimation by the fact that in this great municipality this distinction has only been granted on one previous occasion. Mr. Oliver Heywood, the distinguished citizen referred to, is now present. You have already been for several months in this country, and some of the incidents and results of your last remarkable expedition have been communicated to the public by your speeches and letters, yet it may be said with truth that the public enthusiasm and interest are unabated, and although this is not the only occasion on which you have recently received the highest honour which it is in the power of municipalities to bestow, yet we feel assured that a similar honour has never been conferred with greater cordiality. As you are doubtless aware, the city of Manchester is the centre of a large manufacturing and commercial district, embracing within a radius of twenty-five miles from this chamber not less than twenty-six municipal boroughs and a population of several millions of people. In this large industrial community your career and achievements have naturally awakened the deepest interest, and I venture to say that nowhere has news in regard to your movements been looked for with greater interest, or the successive stages of your progress been watched with greater anxiety, than here. If Manchester and Lancashire hold their supremacy in their great industries, as we intend they shall do, there is no part of Her Majesty's dominions more interested in the inevitable outcome of your great work. The graphic accounts of your travels presented by you to the world will form an enduring record of your indomitable courage and the successful prosecution of a great and perilous enterprise in the exploration of the River Congo, and tracing its course from the interior of Africa to the Atlantic Ocean. The native races among whom you travelled so long have found in you a friend indeed, who has raised a powerful voice in calling public attention to their sufferings and miseries in a manner that has deeply impressed the whole civilised world. It cannot be doubted that the representations which you have so forcibly made upon this subject will influence a vigorous and humane policy towards those tribes, and we trust that the objects you so strongly advocate and so earnestly desire may be speedily accomplished. We hope that the recognition of your eminent services which the city of Manchester has the pleasure of giving in the proceedings of to-day may in some degree inspire and help forward your efforts to civilise and to benefit the native races of Africa. Time would not permit, and any language which I can command would fail adequately to express our feelings of wonder and admiration at the revelations of your last expedition in the Dark Continent, from which we all rejoice that you have returned in health and safety. In concluding these remarks, permit me to hold out to you the right hand of fellowship from the citizens of Manchester, with a cordial welcome, and to ask your acceptance of the freedom of this city, and at the same time to express our best wishes for your long life and happiness.

The Mayor then presented to Mr. Stanley the address of the Corporation, contained in a silver-gilt casket, amid hearty applause.

Mr. STANLEY, in reply, said: Mr. Mayor and Gentlemen,—I fear that if gratitude must be measured by the number of my words or the length of my reply, you will deem me an ingrate indeed if, as I shall have occasion presently to reply to others and also to you, seeing that you are citizens of Manchester, I shall curtail this preliminary speech by merely expressing to you my profoundest gratitude for the honour you have bestowed upon me. Though one may well feel proud of being elected an honorary citizen of a great city like Manchester, and may be immensely gratified to hear of the appreciation with which those works which the Mayor has enumerated to you have been held by you, still you must understand, and you will readily do so, that there is a greater joy possible than receiving honorary freedoms day after day from great municipalities and great cities, and that joy is the pleasure that a man finds and feels in doing a good action. As the poet has expressed it, "Joy so lies in the doing, and the rapture of pursuing is thine." Then also there is that calm approbation of conscience expressed by the poet, "Not once or twice in our fair island's story Has the path of duty been the way to glory." I have always been animated by a single-minded desire to perform my work as thoroughly and as efficiently as possible from the beginning to its consummation. It is not for me to question why the thing should be done, but, as the soldier who was commanded by the Centurion of old to do something said, let others find out the reasons of his doing. Therefore, when commissioned to find Livingstone, all that I could see was that the object of my search was to be attained as quickly and as efficiently as possible, and if I could lend him any extraneous service well and good. Also, when commissioned to continue the explorations of Burton, Speke, Grant, Baker, and Livingstone, what I had to do was simply to map out those plans in order for their complete and efficient accomplishment, and fortunately I succeeded. Then, again, it was not for me to question whether Emin Pasha, the governor of Equatoria, needed relief or rescue, or anything else. The English people believed that he, as the lieutenant of Gordon, sending an appeal for help, ought to be relieved; and when the commission was put into my hands all I looked at was the spirit or intent of that commission. It was not for me to ask whether he wished to be relieved or rescued; all I had to do was to finish my duty completely, and as relief was carried to him and it was afterwards changed to rescue, and he was brought into the arms of his countrymen at Bagamoyo, it surely was proved that the duty that we were sent out to do was accomplished. I may promise you that if ever I shall be sent on any other duty, if I believe it is noble and commendable, you may rest assured that it is in my nature to endeavour to do it as thoroughly and as completely as ever any other duty was performed by me. Mr. Mayor and gentlemen, I hope you accept my deepest gratitude for the honour you have conferred upon me. The freedom of the city of Manchester, placed side by side with the freedom of other municipalities and cities, will enable me to feel the same gratification that I now feel when I shall summon my friends to my house and show them my gifts; and not the least conspicuous of those gifts shall be the freedom of the city of Manchester.

Mr. Stanley then signed the citizens' roll.

The MAYOR announced that three addresses would be presented and Mr. Stanley would reply to them in one speech.

Mr. HENRY LEE, President of the Chamber of Commerce, read the following address from that body to Mr. Stanley:—

To Henry M. Stanley, Esq.

Dear Sir,—The Directors of the Manchester Chamber of Commerce gladly avail themselves of the opportunity afforded by your visit to this city of expressing their deep sense of the valuable service you have rendered to commerce by the information you have made public concerning the interior of Africa, and your declaration of its suitableness as a sphere for commercial enterprise. They regard with admiration the undaunted courage and resolution, under most trying circumstances, which you so conspicuously displayed during your explorations, the prompt manner in which you met difficulties encountered by the expedition, and the ready resource by which you were enabled successfully to accomplish the object of your journey. Your outspoken remarks on the subject of slavery and the atrocities connected therewith, your strong condemnation of the traffic in firearms and ardent spirits as tending to degrade and destroy the natives as well as to hinder the peaceful pursuit of agriculture and trade, meet with our hearty approval. The Directors earnestly hope that your arduous labours may result in the opening up of the "Dark Continent" to the ameliorating influence of civilisation, and the development, in the best sense, of its future welfare. They congratulate you on your safe return to this country, and desire to assure you of their best wishes for a continuance of your prosperous career.—Signed, on behalf of the Board of Directors, HENRY LEE, President.

Manchester, June 21, 1890.

The Rev. S. A. STEINTHAL read the following address from the Manchester Geographical Society:—

To Mr. H. M. Stanley, on the occasion of his visit to Manchester,
June 20th, 1890.

Sir,—It is with cordial pleasure that the members of the Manchester Geographical Society welcome you, their earliest honorary colleague, in this city, which is proud to call you one of its burgesses. When you were about to leave this country to revisit Africa, we gathered round you to bid you God-speed on your way, and now we are glad that we are able to greet you on your safe return after such arduous labours, patiently and bravely endured in the cause of civilisation and of humanity.

With thankful hearts we acknowledge the services you have with such unflinching courage and self-devotion rendered to geographical science and commercial progress; we have in thought accompanied you across that continent into whose darkest recesses you have brought the light of hope, and have opened the pathway for civilisation and religion; we have sympathised with you in the sufferings you have so manfully encountered, and wish that we could adequately say how highly we honour you for the great deeds you and your gallant companions have accomplished. The story of African travel is illustrious with the names of men whose achievements give them a high place among those who, while extending scientific knowledge, have been able to advance the best interests of mankind; and among these illustrious heroes your name shines with a clear brilliancy all its own. If specially associated with that of any of your predecessors, it is with the honoured one of Livingstone. We cannot hope, in our address of welcome, to tell the wondrous tale your eloquent books have made familiar to thousands of admiring readers, but we thank you with grateful hearts; we pray that your labour may not have been in vain, but that God will bless you with many years in which you may be privileged to see your self-devoted toil bearing fruit in the deliverance of Africa from the curse of barbarism, slavery, and heathenism, so that your life, happy in the most sacred personal joys, may also be the source of growing well-being to the millions of that continent which your courage and chivalry have so largely opened to mankind.

(Signed) DEVONSHIRE, President.
J. G. GREENWOOD, Chairman of Council.
S. A. STEINTHAL, Vice-Chairman.
A. R. GALLE, } Hon. Secretaries.
F. ZIMMERN, }
ELI SOWERBUTTS, Secretary.

The Rev. C. N. KEELING read the following address from the Manchester and East Lancashire Auxiliary of the Church Missionary Society :—

Dear Sir,—We desire, on behalf of the Manchester and East Lancashire Auxiliary of the Church Missionary Society, to offer you a hearty welcome on the occasion of your visit to this city, and to congratulate you on the successful termination of your recent mission to Africa.

We wish also to express the satisfaction of our association at your kindly sympathy with the efforts of Christian missions for the enlightenment of the Dark Continent, and your appreciative references to the work of the Church Missionary Society.

We thankfully recall the fact that the mission to Uganda was first undertaken by our society at your suggestion ; and we have learned with considerable satisfaction that those engaged in that mission have been enabled to render some little assistance to you in matters connected with your late expedition.

It is with feelings of chastened pleasure that we dwell upon your high opinion of one who for nearly fourteen years was probably the most prominent figure in that mission, but who quite recently has been called to his rest.

The character and labours of the late A. M. Mackay afford a splendid example of what can be effected by a strong intellect, when fired by a noble enthusiasm in the cause of missions. And his devoted life and early death also bear eloquent testimony to the reality of missionary work, which will not be gainsaid by those who can recognise true greatness even when seen in the midst of obscure surroundings.

We rejoice that we do not need to remind you how largely the labours of the Christian missionary have contributed to awaken in the public mind an interest in the civilisation and elevation of the African races ; and in our further efforts to extend the Gospel of our common Saviour, we earnestly and confidently look for the co-operation and moral support of those, like yourself, whose intimate and intelligent acquaintance with the circumstances of the problem makes their opinion valuable in the promotion of schemes for the real amelioration of native races.

We earnestly hope that your life and health may long be spared, and that the personal qualities with which God has endowed you may continue to be used, under the Divine blessing, for the benefit of your fellowmen in the enfranchisement of those who are in bondage, the enlightenment of the ignorant, and the relief of the oppressed. We remain, dear sir, your very faithfully,

(Signed) J. MANCHESTER, President.
JOSEPH RICE, Treasurer.
C. N. KEELING, M.A.
JAMES P. ROUNTREE, M.A.
C. DUNLOP SMITH, M.A.
J. A. EASTWOOD.
G. F. WATTS.

Manchester, June 21st, 1890.

Mr. Stanley, in reply, said: Mr. Mayor, gentlemen of the Manchester Chamber of Commerce, the Manchester Geographical Society, and the Manchester branch of the Church Missionary Society, I hope you will permit me to address you in one speech in referring to each. Not many hours ago I was continuing the work of exhorting Englishmen and Scotchmen and the inhabitants of these islands to attend to their own interests. I began in London, and continued in Edinburgh, Glasgow, Dundee, Aberdeen, and Newcastle. I must continue it here. In coming towards the coast from our mission I saw many things which compelled me to think, and when I returned to this country I found that few people knew what was about to take place, what the German occupation of East Africa and what the tentative efforts of the British East Africa Company meant. I was considerably nonplussed when I heard the Premier say at the Merchant Taylors' banquet that the topic of Africa was embarrassing and inconvenient. It struck me that there was a necessity for somebody to stand out and endeavour to teach the British people that these things meant a good deal. I probably stepped out of my sphere to do so. I should have been grateful had anyone else done it, and I should have kept in the silence which best befits me, because, as you know, we don't practise public speaking in Africa. Wherever I go throughout this country I hear eloquent, fluent speakers, and I envy them for nothing more than for that remarkable fluency which enables them to roll out sentences of inordinate length and grand beauty. We in Africa confine ourselves simply to giving the necessary orders, and to seeing that those orders are carried out, and perhaps to interchanging good mornings or exchanging salaams, as we pass on our way thinking and reflecting. It was possibly on account of the large leisure permitted to me whilst exercising these mutual interchanges of goodwill that I was enabled to realise the necessities of Africa. And among the most pressing of these necessities was that of arousing the English people to the recognition of the work that the British East Africa Company was about to carry out, as representing British interests at large in Africa. It also struck me that not only might commercial men be benefited, but the missionaries in Africa might receive benefit. As I came along I saw Mr. Mackay, of the Church Missionary Society, at the south end of Lake Victoria, and while conversing with him a courier came in from the coast with despatches, wherein I saw the charter of the East Africa Company. I saw there that their charter was over a territory which extended from the north shore of Victoria Nyanza, so that Mr. Mackay's station was in German territory. I was gratified, however, to find that the line of German territory was the south shore of Victoria Nyanza. Two hundred miles from Bagamoyo, on the Indian Ocean, I came across a place I had discovered in 1871, and which I considered would be a good place for a mission station. It had been occupied by the Church Missionary Society, and not far off there was a mission station of the London Missionary Society, Mpuapua, which was favourably situated at the base of a line of noble mountains. There was a fine stream near by, and the people were docile and good-natured; and bit by bit the station grew in importance until there were fifty native villages established round that one mission station, whereas in 1871 there were but two villages. I found that the church that they had built had been burnt down, that the mission station was roofless, and that the missionary, Mr. Price, was hiding in the bush half starving. He came to me in rather a dilapidated condition, and I asked him what was the meaning of it. He said it was the German occupation of East Africa. In coming out of the bush we learned things bit by bit. One of the orders issued by Major Wissmann was that no more caravans would be permitted to go into the interior, and that all trade routes of the British would be closed. Knowing these things, knowing that I was responsible as much as any man living for the establishment of Mackay's station at Makolo's, of the Church Missionary Society's station at Uganda, and of that mission church at Mpuapua, I thought it was about time for me to speak. When I came to examine those things I found that from originally planting a few acres of tobacco the Germans had gradually crept over the whole of East Africa until they had absorbed 600,000 square miles, and I heard on arriving in England that this 600,000 square miles was but a small portion of what they intended to obtain somehow. Then I thought that if the Government and the Premier allowed that beautiful snowy mountain, Kilimanjaro, to be ceded to the Germans, allowed that insolent diagonal line to go north-west instead of west, allowed the mission station at Mpuapua and the manse to be burned down and that religious community scattered, after your missionaries had invested thousands of pounds in the work, and given a great many years of labour to the work of civilisation—I say, if all these things were to be set at naught, then there was very strong reason for somebody to speak. Therefore, I must needs crave your forgiveness if I meddled in matters which perhaps you think I had no business to do with at all, but it was necessary for me to explain the reason of my speaking. But now I learn that all this is about to be ended. You have reminded me to-day of my associations with Livingstone, and the sentiments you have expressed appeal to me most powerfully. We travelled many months in companionship, edifying enough to me, through a large portion of the region over which Burton and Speke had travelled, and in which Colonel Grant had laboured, and had made discoveries, all of which threatened to become German; and I knew als that my friends Sir William Mackinnon, Sir Francis de Winton, and others had clubbed together, putting £240,000 together for the purpose of exploitation upon a territory described by the charter as belonging to the Imperial British East Africa Company; but if that insolent line, starting at the base of Kilimanjaro, was to be continued north-west, I failed to see how my friends could get anything out of the country, for all that was left was semi-desert, as that line would cut off all that rendered promising the prospects of the British East Africa Company. Now, Lord Salisbury said at the banquet that the subject of Africa was embarrassing and inconvenient. That rather added to my uneasiness. . Having travelled across Africa twice, and having wandered up and down it about 24,000 miles, I have come across a great many African chiefs and others who are in the habit of adopting the same style of speech—that is, to belittle anything that they might want to obtain. It may be high statesmanship and high diplomacy to belittle a thing that we want to get, but, at the same time, I prefer my own simple way of adhering to "yea" and "nay," and I hope my "yea" and "nay" will be "yea" and "nay" still. At the same time it is just possible that Lord Salisbury may have been inclined to do good by stealth, and I must admit he has done a vast amount of good, and therefore we will not be ill-natured, nor will we adopt the tone of that accomplished and versatile young gentleman, Mr. Howard Vincent, and say that Lord Salisbury has exchanged the beautiful island of Heligoland for a forest full of pigmies. I do not know where Mr. Howard Vincent can find a forest full of pigmies in that section which is to be taken over as British East Africa. As Mr. Howard Vincent was at one time the head of the Criminal Investigation Department he may have more detective powers than I have, but I think that 200 would be a fair estimate of the number of pigmies to be found in that 650,000 square miles acquired by Lord Salisbury's diplomacy. I am told that Heligoland has eight cows and thirty sheep. Well, the island of Pemba, near Zanzibar, has something like 20,000 acres of cloves and cinnamon, and the produce of this will far exceed the value of eight cows and thirty sheep, and even compensate for the beautiful facilities for sea-bathing which are to be had at Heligoland. What we should be most proud of in this acquisition of Lord Salisbury's is the vast scope and boundless possibilities for British enterprise in Africa. Not long ago the British East Africa Company were anxious for the possession of 150,000 square miles, but they have now secured 500,000 square miles in addition. I can see an enormous possibility for enterprise to extend towards the north over the entire Nile Valley, past Khartoum and Berber down to Cairo and Alexandria, so that when you come to reckon all the tribes of the Soudan, now shut out from civilisation by the Mahdists at

Khartoum, and when you come to count up those tribes scattered over that territory between the Victoria Nyanza and Abyssinia, and all that beautiful pastoral upland secured to you between Lake Albert Edward and Lake Victoria down to the Alexandrian Nile, one degree south latitude, I really think the citizens of Manchester should unite in getting up a testimonial to Lord Salisbury for securing to us such valuable territory. When we look to the German agreement you will find that the Germans have obtained a valuable territory upon the Alexandrian Nile. It is a fine coffee country, and in passing through it lately we used to see caravans daily bearing coffee to send to regions west, north, and south of that territory. It is now ceded to Germany, therefore Germany has a right to be proud. I can see also that on the southern part the Germans have a right to feel eminently happy in the extension of a boundary which has enabled them to complete and obtain possession of one-third of the coast line of Lake Nyassa. They have also got a long lake nearly 100 miles long lying between Lake Nyassa and Lake Tanganyika, so that they are enabled to convey goods there by water with only a land journey of some 150 miles. If the British were anxious to send freights to Lake Tanganyika, the Germans will be enabled to carry such freights for nearly half what the British could carry them for, so that there the Germans have again obtained very fair advantages, of which they should be proud indeed. Look at the magnificent shore line of Lake Tanganyika, 363 miles of which is recognised as being the boundary to the west of German territory. Besides that they have got that most fertile estate of Rwanda, which may turn out to be the most unique region in Africa. Ten years ago a queen reigned over that region, and her son is now reigning in her stead over three millions of people. It has been reported to me that the founder of that dynasty was an Arab from somewhere near Khartoum, and his scimitar may still be seen hanging in the king's palace, so that the Germans may have the privilege of influencing a nation which may turn out to be one of the most interesting nations in Africa. That is pretty well for the Germans. From the English point of view, what privileges have you enjoyed? As I said just now, the British East Africa Company were trembling for 150,000 square miles, two-thirds of which was semi-desert, because on the east coast, near to Mombasa, the Germans had the right of occupation to a place there. Now the authority is surrendered to the British East Africa Company, and the territory is extended right up to the Juba river, so that you have 200 miles of coast added to the original 125 miles, and then you have that solid block of 500,000 square miles upon the top of the 150,000 square miles, possession of which seemed doubtful some time ago. However much we may talk about the possessions in Africa, I need not tell you that the existence of angry feelings between Germany and Great Britain would be poorly compensated for by the possession of any amount of wilderness. All we cared for was the principle that what the British people had toiled for should be secured to them. About petty details I do not think you or I would grumble very much. As the Church Missionary Society have been pleased to present me with an address, I may say that I can see unlimited scope for their work in Africa now. It will be my next endeavour to try and infuse a desire amongst the members of the British East Africa Company to prosecute their railway enterprise as far as Lake Victoria, and no doubt missionaries will be amongst those who will profit by that railway. There is a large population at Uganda and Tunguru liable to be influenced by their work, and if we can carry stores and enable missionaries to reach Lake Victoria without almost killing themselves on the arduous journey through the wilderness, I think we should hear less of disaster attending their mission. You know how Bishop Hannington and his party were massacred. You know how Bishop Tucker died after a wonderful journey of 1,100 miles on the south shore of Lake Victoria, and poor Mackay, after thirteen years' arduous work, has now succumbed. If we had had a railway to Victoria all those precious lives would have been saved. Mackay, upon the appearance of illness, might have stepped on a steamer, and then taken the train to Mombasa, and reached England by the first mail steamer, instead of being dispirited with the long land journey between Lake Victoria and the sea. Now, again, I think the settlement makes it possible to suppress the slave trade in Africa. I think a fair beginning was made by the company when they purchased the freedom of 3,000 slaves for £12,000, and allowed the slaves to go free after only four months' labour. You know the English freed the slaves at Jamaica and demanded seven years' labour, but the British Company only asked for four months' labour in order to give them their freedom, and possibly the next purchase they make they will make it without any condition whatever. With the power and possibility of engaging the labour of slaves by paying so many dollars per month, it will be found impossible for Arab traders to go through that region in future, devastating and desolating the country as I have seen it further west. It used to be the fashion for a number of caravans to band themselves together until they were about 2,000 strong, and then march through Masailand and take whatever they could. In the same way the people at Uganda used to send parties of 5,000, 10,000, and 20,000 strong into regions east of the Victoria Nile devastating large territories there, and then the slaves, after having been brought to Uganda, were transhipped and sold to Arabs. That will be rendered impossible in the future. I suppose you have a fair idea of how the work has been going on in the forests of Africa. Down to the time of Livingstone's death the fashion was for the Arab traders to start in long caravans from Zanzibar carrying beads and cloth and copper and brass wire, but now there is not the least semblance of that going on west of Tanganyika. The caravans contain simply so many bands of brigands. They march in three separate directions, and after having secured an area of 50,000 square miles they plant their flag in the centre, and from that centre proceed to slay in the most remorseless and cruel fashion every human being in order to pick up what loot they can. The banana plantations are cut down, and the entire population of that region having been slaughtered, the elephants come and complete the waste, so that the banana plantations, which once afforded nourishment for a large population, are trampled into the mire. It is about time that these doings should be stopped. This is the latter part of the nineteenth century. The whole African coast has been pre-empted, and do you not think it is a shame that when the European Powers have combined to absorb the coast line they will not pay one moment's thought to the poor inhabitants of the interior, who are now the prey of all the brigands from the Mohammedan states of the Soudan? The British East Africa Company have about 4,000 men in arms, and when this force marches to the westward and northward I should tremble for the fate of any slave dealer who will be found there. On my return to London I shall do my utmost to endeavour to inspire the British East Africa Company to be still more active, and not to rest satisfied until we are enabled to carry that momentum of civilisation which is wanted for Africa straight, without stoppage, to the Victoria Nyanza. Now gentlemen, my speech has run at great length, I am sure, in a random fashion, but you will quite understand what a very large subject it is, and that I might dilate upon it for hours. I will confine myself, then, simply to saying to the gentlemen of the Chamber of Commerce, I think, as you are most interested in cotton in this county, you may also be grateful for such a very large area capable of growing cotton as has been secured to the British possessions. I think, also, that the geographers have a right to feel immensely gratified, because, between you and me, I was rather afraid that the age of explorers was past, and that I unhappily was the last, because if Germany was going to overrun all that territory it is very doubtful whether they would be so kind to British explorers in the future as British people would be inclined to be to German explorers. And therefore I think in that unlimited space from East Africa to the Soudan states you may hear of wonderful things yet explored by British explorers in British regions. As for the Church Missionary Society, I hope they will urge on unrestingly the necessity of sending forward more missionaries to assist the poor Uganda people in the desire to enjoy the light and blessings we enjoy in this Christian country. And, gentlemen, for all these magnificent and superbly engrossed testimonials accept my thanks. For the kind and hearty reception you have given me in this room I beg you to believe that I am very grateful, and that by it I have been profoundly touched.

Mr. Stanley was then escorted to his apartments, and was heartily cheered as he left the Council Chamber.

THE LUNCHEON.

SPEECH ON AFRICAN GEOGRAPHY AND MISSIONS.

In the afternoon Mr. Stanley was entertained at luncheon in the banqueting chamber of the Town Hall. The Mayor presided, and amongst those present were the Mayoress (Mrs. Mark), Miss Mark, Miss Florence Mark, and Mrs. F. Lee, the Deputy Mayor (Alderman Sir John Harwood), Aldermen Asquith, Evans, Griffin, Heywood, Hopkinson, King, Livesley, Milling, Reade, Roberts, Schofield, Shaw, Smith, Thompson, and Windsor; Councillors Aldred, Andrews, Ashcroft, Bagnall, Bax, Birkbeck, Boddington, Bradshaw, Brooks, Batty, Cardwell, Clay, Cuff, Estcourt, Fullerton, Gibson, Grantham, Gunson, Hampson, Haworth, Hinchliffe, Hoy, Hutt, Leech, A. Lloyd, R. Lloyd, M'Cabe, M'Dougall, Marshall, Milne, Myerscough, Needham, Newton, Norris, O'Neill, Pingstone, Richards, Roberts, Royle, Sherratt, Simpson, Smallman, E. Tatton, J. Tatton, Chesters-Thompson, Tunstall, Vaudrey, Williams, and Worthington. There were also present Mr. J. W. Maclure, M.P., Mr. William Mather, M.P., Messrs. B. Armitage (Chomlea), J. A. Beith, H. P. Brown, William Bickham, jun., Bonny, R. H. Edmondson, R. Falkner, William Fogg, A. E. Fitzgerald, A. T. Forrest, J. Farrell, T. W. Gillibrand, A. R. Gallé, Elijah Helm, R. P. Hewit, Oliver Heywood, F. J. Headlam, Thomas Hudson, J. Thewlis Johnson, James Jardine, S. Keymer, Sir J. C. Lee, Messrs. Henry Lee, George Lord, Joseph Leigh, J. H. Nodal, Samuel Ogden, C. J. Pooley, William Pollitt, S. R. Platt, J. S. R. Phillips, E. Ross, Rev. J. P. Rountree, Mr. T. D. Simcock, Rev. S. A. Steinthal, Messrs. Eli Sowerbutts, Thomas Schofield, William Henry Talbot, T. R. Wilkinson, T. Worthington, William Wood, Dr. A. W. Ward, Messrs. C. Malcolm Wood, Thomas Wrigley, and F. Zimmern.

After luncheon, the usual loyal toasts were honoured.

The MAYOR then proposed the health of their distinguished guest, Mr. Stanley. The city of Manchester, he said, had through its corporate representatives that morning, by the powers given to it, presented the freedom of the city for distinguished services to Mr. Stanley. Their feelings of satisfaction in the accomplishment of that object were, he thought, unanimous, and he expressed not only his own feelings but theirs when he said that they wished him in his future career every good wish, and that they connected with that wish the estimable lady who in the near future would become the Tennant of his future existence for better or for worse, and they very much wished that the better might in a large degree prevail. It was not his wish, and he was sure it was not theirs, to overtax the energies and the patience of Mr. Stanley in the recognition of the honours which they desired to heap upon him in Manchester in no small degree. They did not expect from him, unless it were his particular wish to delight them with his eloquence, any reply to that simple toast, because they felt that he had very handsomely responded to the addresses which were presented to him that morning. Indeed, they were thankful after his long tour in Scotland to have him there at all looking so well as he was. He had watched with much interest, and had been very much surprised that in Scotland they had not claimed Mr. Stanley as a countryman. That was really astonishing, and he was sure they would all feel it that they had not claimed Mr. Stanley as a Scotchman. Well, he did not care where he came from—he was a very good fellow. The time was very limited, and they could very well understand after the exhaustion of a lengthened speech on the previous night and that morning Mr. Stanley's recuperative power should be somewhat considered. He (the Mayor) thought it was good for him to have a little sea air, and accordingly he had made arrangements with the directors of the Ship Canal to take him for a short trip over the canal course. Of course that was entirely relaxation and rest, for which Mr. Stanley had been pleading that morning. There was one subject that was very near to Mr. Stanley's heart besides that to which he had previously alluded, and it was that a steamer should be placed on the Lake Victoria Nyanza for the use of missionary enterprise. It would cost £5,000, and towards that £1,000 had already been contributed, and if he could excite any of their sympathies in this direction he would be very glad. Mr. Stanley was very much in earnest about the value of missionary enterprise in Central Africa, and if any of them felt disposed to "hedge a bit," they might very well contribute to this good purpose. He proposed to them with all heartiness, as representing the cordiality of Manchester, "The health and happiness of Mr. Stanley."

The toast was heartily honoured.

Mr. STANLEY, in replying, said he was sunk in a profound reverie about certain ancient geographers and writers upon the science of geography when the Mayoress proposed to him a conundrum, which he would reveal in order that his hearers might assist him in its solution. The conundrum was, When will Mr. and Mrs. Stanley be entertained here? It quite set him aghast. When he saw he was down to reply to the toast of "The Guests," he thought he would get some fine original ideas ready, but that conundrum upset his calculations. He left it to the people of Manchester to answer the question. Certainly if the epidemic of good nature would continue, it very likely would be shortly. One of the grandest things he had done in old Africa had been, he thought, to reconstitute the old geography. From the time of Homer down to the beginning of the present century there had been certain localities mentioned as the place where the pigmies of Africa lived, and at a certain other place, which was not very exactly located, the Mountains of the Moon were supposed to be. Homer located the Mountains of the Moon somewhere about the equator. Three lakes also were mentioned, and these were assigned to various localities by successive geographers, until in 1818 the Scotch geographers just erased all the lakes from the map of Africa and drew the Mountains of the Moon as a prodigious range of mountains extending from the Gulf of Guinea to the Gulf of Aden. If there was any member of the Geographical Society of Manchester present he begged him to lay this earnestly to heart. Let him keep strict watch and ward over these interesting features of Africa, especially over Lake Victoria, Lake Albert

Lake Albert Edward, and the Mountains of the Moon. Don't let them be scattered about Africa. With regard to the placing of a steamer on Lake Victoria, in 1875 he made an appeal on behalf of a certain black sovereign situate near the equator, who was growing cotton and sugar, corn, bananas, and plantains, who could supply his guests with fifty bullocks at once, or enable them to bathe in plantain wine or milk, or could smother them in honey. He made an appeal in that monarch's behalf because he had stated that he wished to see the light—such light as white men saw. He wrote an appeal, which appeared in the *Daily Telegraph*, and the English people made a very liberal response. A mission was sent to Africa, and established itself in Uganda. Fifteen years after that appeal was made he came back to the neighbourhood of Lake Victoria, little thinking that that letter had produced any results. At that time he had been spending two and a half years in the wilds of Africa fighting almost every day, not only against cannibals and the pigmies of the forests of Africa, but against the evil instincts of human nature. There was plenty of good in human nature, whether wild or civilised, but it was so covered up with evil that one had to be very patient and penetrating in order to reach it. After two and a half years' experience amongst the wilds of Africa and in the forest solitude, not only himself but his entire expedition were hungering after something more approaching the civilisation of the day. At last, after infinite trouble, they saw the Christian cross domineering a humble church, and then they knew that they were gradually approaching near to the influence of civilisation. That church was the result of the seedling he had dropped from Uganda in 1875, and it was there to welcome not only himself but his entire expedition of 600 people. When he saw the Christian cross on the top of the church he thought of the words, "Cast thy bread upon the waters and thou shalt find it after many days." Here in sight of this hospitable mission there was abundance of tea and coffee, and potatoes and meat, and there was also wine to cheer the traveller, as well as books and newspapers. It was then he felt that he had arrived within measurable distance of the people of Manchester. That poor missionary, who had welcomed them after their two and a half years' experience in the forest solitude and amid barbarism indescribable, was dead. He had died for want of the very thing which the Mayor had that day stated he (Mr. Stanley) had at heart, namely, the establishment of a steamer on Lake Victoria. Twelve years ago that missionary started from England with the engine of a small steamer. Through circumstances natural to savagedom, parts of the machinery were left at certain places, and somehow or other the missionary was unable to gather them together for the boat, so that when he (Mr. Stanley) saw the missionary in 1889 (August 28) he said to him, " Well, Mr. Mackay, where is that steamer I have heard so much about, and that has been twelve years in building?—almost as long as the Temple of Solomon took to build at Jerusalem." " The trees are in the forest." " Have they not been cut down yet?" " No, but we hope to do it." " The machinery?" " Oh, you can go to the blacksmith's shop and see that it is in process of construction." He (Mr. Stanley) went to the blacksmith's shop and saw two black engineers painfully screwing one screw in per hour. He said, " My dear Mr. Mackay, why are you wasting your precious life and talents on this work? Why don't you appeal to the people of England to send you a steamer properly built and ready to be launched on the lake? The people of England don't understand how to send out missions, and if ever I get an opportunity of speaking to them I will." The English people sent a missionary into the interior of Africa without proper equipment, and because they spent a few thousand pounds they expected to have 50 or 100 converts made to order. They did not remember that the missionary, before he could begin the work of conversion, must first of all learn the language and conquer the fever. They never thought of the inclemency of the climate, of the barbarism in the centre of which he must live and which he must enlighten. What with learning the language, building his house, and looking after his earthly necessities three times a day—breakfast in the morning, luncheon at noon, and dinner in the evening—the missionary's time was already gone, and days grew into weeks, weeks into months, and months into years, and there were no converts, and the English people became impatient. Let them think a little. If they sent out missionaries properly equipped they would make any number of converts, but how, under the circumstances, poor Mackay and his assistants had been able to turn out 5,000 in ten years was a perfect marvel to him. In order to make that mission succeed, and in order to start the expedition fifteen years after it had been established, let them put a little sense together. He had given £50 towards it, and the respectable manufacturers and merchants of Manchester could surely do more than he, a poor impecunious traveller. Let them give their money to the Mayor, and ask him to forward it to the Lord Mayor of London as a contribution from the merchants and manufacturers of Manchester, who were grateful to God for the blessings they enjoyed, and wished to disseminate them over Africa. Let them put down a handsome sum and put a steamer on Lake Victoria, not only to carry the Bible but also to carry their cotton among those 10 million on the shores of the lake. He had spoken fairly and squarely, and it was for them to answer him. When he was in Manchester, in 1884, he told them what yards upon yards of cotton they could scatter up the Congo among the 35 million of people there. But he was impractical, and the people of Manchester did not believe him, and now the people engaged in business in the Congo basin were making 100 per cent, which the Manchester merchants might have had. But, no, he was a traveller and impractical. Now, in fair and grim earnestness he told them they were the people who were impractical. They could not even look at this thing fairly and squarely in the face; they could not believe that a reporter of the *New York Herald* could tell them plainly and deliberately a little bit of common sense. Trade in Africa was taken away from the English people by Germany and Belgium, and if they did not stir there would be nothing left of broad Africa for the English. They were indebted to Lord Salisbury for having stretched out his hand to save one field. He asked them to work up to it, to be equal to the occasion, to prove to Lord Salisbury that he had not acted for an ungrateful people. He asked them to contribute nobly and freely, as became the merchants and manufacturers of Manchester, to the fund for the steamer on Lake Victoria, and not to be the last and the least of the contributors to the railway to that lake. With the profoundest gratitude, and with sincere affection for all present, he thanked them for the patient hearing they had accorded him; and in conclusion he expressed the hope that if ever he should be able to boast of a Mrs. Stanley he would have the pleasure of introducing her to the people of Manchester.

Sir **John Harwood** proposed "The Health of Mr. Bonny and other Members of the Expedition." He said Mr. Bonny had been one of Mr. Stanley's most trusted and most faithful companions in all the hardships and trials through which he had passed. It had been enough to read how Mr. Bonny was left for 464 days of anxious suspense with about 250 men, and how day after day he saw those men sink away under the trials and hardships and deprivations to which he and his companions were subjected, till, when Mr. Stanley returned, Mr. Bonny's staff and companions were reduced to between 70 and 80. They were all grateful to Mr. Stanley and his followers for the influence they had exerted against the traffic in human beings.

Mr. **Bonny**, in replying to the toast, which was cordially drunk, said it was because he and Mr. Stanley's other companions knew the career of Mr. Stanley, the nature of the journey he was about to enter on, and the object in view, that not only they but thousands of others were ready to join him in that expedition. They had no idea, of course, when they left their country of the difficulties exactly they would have to meet; but, finding themselves in the midst of difficulties, he thought they put their shoulders to the wheel and braved them. He paid a warm tribute to the manner in which their distinguished leader grasped the situation and reorganised their expedition after his return to the decimated rearguard, of which he (Mr. Bonny) was the only surviving white man, after the long interval of 464 days. He related also how, when he himself was fever stricken, and threw himself on the grass half unconscious, while the caravan had passed on, he saw a native armed with spears, who came up to him, and after looking at him for a time went away and brought him some milk, which restored him. Although he tried to intimate to the native that if he would come into their camp he would reward him, he never saw the man again.

He related the anecdote to show that these people were such as might eventually be traded with freely.

Mr. **Henry Lee** proposed "The Mayor and Corporation of Manchester," congratulating the Mayor on being the principal person in the city, which he took to be the commercial capital of England, if not of the world. The Corporation had always been foremost in carrying out work of a most valuable character; and had set an example to other corporations throughout the land. They were to have a very large extension of the city in the course of time, and he hoped that extension would keep going on till Manchester became one of the largest corporations in the kingdom. It was said that the power of municipal corporations was to be extended, and that there would be committed to them many things with which the Imperial Parliament had been accustomed to deal. He hoped it might be so, for he believed there were many things which the Corporation could do better than they were done in the House of Commons.

The toast having been honoured, Mr. Alderman **Heywood** replied, and the proceedings terminated.

VISIT TO THE SHIP CANAL WORKS.

At the conclusion of the luncheon Mr. Stanley made a short tour of inspection along the banks of the Manchester Ship Canal. Mr. Stanley was accompanied by Mr. Bonny, the Mayor and Mayoress of Manchester, Miss Mark, Mrs. F. Lee, Miss Florence Mark, and a number of members of the Reception Committee. The party drove in open carriages from the Town Hall to the docks at Pomona, where they were received by Sir J. Lee (deputy-chairman of the Ship Canal Company), Mr. Alderman Bailey, Mr. Joseph Leigh, Mr. Henry Boddington (directors), and Mr. A. H. Whitworth (secretary). A train, consisting of two carriages and an open wagon, awaited the party, and on entering the carriages the visitors were conveyed past the docks at Salford to the Barton lock. At one point of the journey a length of the canal was partly filled with water, giving the visitors an excellent idea of the waterway when completed. The sandstone cuttings at Barton were inspected with much interest. Returning from Barton lock a pause was made to enable Mr. Stanley to view the operations of the steam digger which was at work in the cutting below. The distinguished explorer appeared to be thoroughly pleased with his flying visit along the canal, and to be much impressed with the gigantic proportions of the enterprise. Although time did not permit of an exhaustive inspection of the canal, Sir Joseph Lee supplied Mr. Stanley with all the details of the undertaking, at the same time expressing his sanguine anticipations that the scheme would be completed in the stipulated period. From Pomona the party drove to the Town Hall.

RECEPTION AT THE TOWN HALL.

The Town Hall was crowded in the evening by a brilliant company, when a reception was given by the Mayor and Mayoress in honour of Mr. Stanley's visit. The number of ladies and gentlemen present was flatteringly large, some 1,300 having accepted the Mayor's invitation. The Mayor and Mayoress received visitors in the State apartments from half-past seven for about an hour, Mr. Stanley being present. For the occasion the official apartments were tastefully decorated with plants and flowers, and light refreshments were served. In the large hall the band of the 9th (Queen's Royal) Lancers played a selection of appropriate music under Bandmaster

W. Winter, while at intervals vocal pieces were capably rendered by a male choir, chiefly drawn from the Cathedral. During the evening, too, the police band played in the Sculpture Hall. Mr. Stanley, who wore his Belgian decorations, was of course the centre of attraction, and during the evening promenaded the principal rooms and corridors with the Mayoress. Amongst the guests, besides members of the Council and Corporation officials, were the Mayor of Salford (Mr. B. Robinson), the Mayors of Bolton and other Lancashire towns, Archdeacon Anson, Principal Ward, Mr. Herbert Birley (chairman of the Manchester School Board), Mr. G. F. Fisher (chairman of the Manchester Board of Guardians), Mr. E. S. Heywood, Mr. C. J. Heywood, Mr. H. Dunckley, Mr. Alderman Forrest, Mr. Alderman Bailey (Salford), Mr. Joseph Leigh, Mr. E. J. Broadfield, Mr. S. Hazzopulo, Mr. E. Guthrie, the Rev. Dr. M'Laren, Mr. I. Levinstein, Colonel Clark, Mr. Henry Lee, Mr. Bonny, Mr. S. Brown (Town Clerk of Salford), and Mr. R. Barclay.

The address presented to Mr. Stanley by the Manchester Corporation, embodying the expressions contained in the resolution of the Council, and placed in the casket, is illuminated on vellum, backed with white watered silk, and ivory rollers attached to the top and bottom. It is an elaborate and descriptive work, illustrating some of the principal events of Mr. H. M. Stanley's late African expedition. In the top left-hand corner is placed a coloured portrait of Stanley, enclosed within the semi-circle (described by the letter C), brilliantly embossed in gold. Immediately under the C is placed a map of Africa, with a telescope, quadrant, and compass, amidst palm leaves, ferns, and other tropical plants, separating five pictures continuing along the left-hand side and bottom of the text. Immediately under the map of Africa, Stanley and his attendants are shown emerging from the forest after a march of one hundred and sixty days. The next picture contains Stanley conferring with Kavalli, chief of the Babiassi, with a group of attendant Ethiopians. Beneath this is a representation of the village of Wambutti dwarfs, in the dark recess of a gloomy African forest. The left-hand corner terminates with a picture of Panga Falls. At the extreme right-hand corner is embossed the seal of the Corporation of Manchester, emblazoned with gold and in proper colours. The intervening space is occupied by a sketch of Ruwenzori (the Snowy Mountain), identified by Stanley with the "Mountains of the Moon." The principal words in the text of the address are displayed in brilliant colours, and it is signed by the Mayor and Town Clerk. The effect of the whole work is that of a richly emblazoned legal document.

The address of the Manchester Geographical Society is chastely illuminated, and has a frontispiece sketch of the Town Hall. A suitable border surrounds the presentation title, embracing tastefully-coloured representations, of the Geographical Society's stamp, &c. The whole is bound in purple morocco, with inlaid monogram and border on the front of the cover, and the Manchester coat of arms on the back, and is contained in a leather box.

The addresses from the Chamber of Commerce and the Church Missionary Society were similar to the one presented by the Manchester Geographical Society, but not of so elaborate a character, although very beautiful.

MR. STANLEY'S DEPARTURE.

Mr. Stanley left Manchester by special train for London. He was accompanied from the Town Hall by the Mayor and Mayoress, their daughters, the Town Clerk, and the Chief Constable. The party were driven in open carriages, preceded and followed by mounted policemen. Mr. Stanley was given a most cordial reception along the line of route, and several hundreds of people followed the procession to London Road Station. At the station the party were joined by Mr. T. R. Wilkinson and Mr. Pollitt, general manager of the Manchester, Sheffield, and Lincolnshire Railway Company, by whom the special train was run. The Mayor accompanied Mr. Stanley to London. Before leaving, Mr. Stanley expressed to the Mayor, the Town Clerk, and the Chief Constable his hearty thanks for the kind reception he had been accorded, and his admiration of all the arrangements that had been made for his comfort and convenience.

ADDRESS TO THE TYNESIDE GEOGRAPHICAL SOCIETY BY SURGEON T. H. PARKE, D.C.L., ON INCIDENTS CONNECTED WITH THE RELIEF OF EMIN PASHA.

MR. **ALBERT GREY** presided, and there was a large and brilliant gathering.

Surgeon **PARKE**, who was received with enthusiastic cheers, said: Before saying anything about my African experiences, I wish, in the first place, personally to thank the President and members of the Council for the honour they have conferred upon me by electing me a Corresponding Member of the Tyneside Geographical Society—a compliment for which I feel deeply grateful. I have steadfastly refused all invitations to lecture or give an address anywhere since my return from Africa, partly because my duties in the army prevent me, and mostly because I dislike speech-making very much. My only excuse for my presence here to-night is the repeated entreaties of your energetic Secretary, Mr. Smithson, whose unwearied exertions I had not the moral pluck to resist.

THE EXPEDITION.

The Emin Pasha Relief Expedition, as you all know, was started in response to an appeal direct from Emin himself—his letters for help touched the sympathies of a benevolent few, principally Scotchmen—who subscribed about £20,000 sterling, with which they equipped an expedition to send him relief. With characteristic shrewdness these gentlemen invited Mr. Stanley to take command, as they knew no better man for the purpose. He at once cancelled his engagements in America, and at great personal inconvenience and considerable pecuniary loss, came to England, consulted with the committee, and after organising the entire arrangements, he left England for Zanzibar, on January 21st, 1887, stopping for a few days in Cairo to complete negotiations with his Highness the Khedive, who had subscribed £10,000 from the Egyptian Treasury.

HOW DR. PARKE JOINED IT.

It was owing to this short stay in Egypt that I had the good fortune to make his acquaintance. I had just returned from the Nile expedition for the attempted relief of Gordon, and was at this time stationed at Alexandria, where I met Major Barttelot on January 20th. He was an old campaigning friend of mine, and I asked him where he was going. He said that he was going with Stanley for the relief of Emin Pasha and on inquiring who Emin was, he replied that he was "some fellow in the middle of Africa who wanted to get out and couldn't." I was then getting rather tired of the routine of service life, and immediately said that I should like to go also; but he discouraged me by saying that Stanley had already selected his officers from amongst over 1,000 applicants. However, as Stanley was to arrive a few days later, on the 27th, I determined to waylay him; and, directly the P. and O. steamer arrived, I picked up courage, sent in my card, and was granted an interview of under two minutes. When I departed from him it was with the conviction that my services would not be required. I wished him success, and thought nothing more of it until next evening, when I received a telegram at a dinner party from "Stanley to Parke. Will you accompany me on the expedition?" I answered "Certainly." I went by train to Cairo that night, got leave from the military authorities on the same conditions as Barttelot and Stairs, viz., without pay; returned again to Alexandria, gave myself three days to collect my kit, and started for Zanzibar with Mr. Stanley on the morning of the 3rd February, 1887, having said goodbye to numerous friends at the railway station, many of whom said, "Lucky fellow," and others, "Poor devil."

OFF TO THE CONGO.

On the 22nd of February we arrived at Zanzibar, re-embarked on board the B. I. s.s. Madura, and two days later steamed away to the Congo, with the entire expedition on board, consisting of 9 Europeans, 13 Somalis, 62 Nubians, 623 Zanzibaris, and Tippoo Tib, the famous ivory hunter, with 90 of his followers, most of whom were women belonging to his "harem." These creatures were extremely dirty and very seasick, for which distressing complaint they insisted on being treated by liberal doses of "Eno" and "seidlitz," as they considered any effervescing medicine a specific. We touched at the Cape to coal, and arrived at the Congo on the 18th of March, having only had three deaths on board, an unprecedented immunity from sickness. Ten per cent is the usual reduction from the numbers physically fit. Ours was 1½ at the utmost. We were now conveyed in smaller steamers 108 miles up the Congo to Mataddi, where the expedition and all equipment were disembarked. Here final arrangements were made, and we marched away on the 22nd for Stanley Pool, on the Upper Congo, 345 miles of which distance we accomplished in exactly one month.

THE OVERLAND MARCH.

This was our first marching experience, and it certainly was unique, for every atom necessary for the relief was carried upon men's heads, as there was no other means of transport. Each man carried 100lb. in weight. The march was over a picturesque, grassy, undulating country, well watered and wooded, and marked by an ordinary caravan track, along which we walked in single file, but as the men were in very soft condition the advance and rear guards were separated at times by several miles. His Majesty the King of the Belgians generously assisted the expedition by placing all the available steamers and barges on the Upper Congo at Mr. Stanley's service, and on April 25th the first detachment of the expedition left on its way up the river for Yambuya, a distance of 1,100 miles, which was reached on the 16th of June. The Congo river has, I believe, 7,000 miles of navigable water, including the reaches between the cataracts. It is a very dark and muddy water, and flows with such velocity that fresh water has been found as far as 300 miles out at sea. It varies in width from one to twenty miles, and its banks are low, swampy, and almost entirely covered with forest. On the 28th of June, four and a half months after leaving London, Mr. Stanley, his European servant, Stairs, Nelson, Jephson, and myself, with 389 blacks, left Yambuya as the "advance column" to go and find Emin, leaving behind a strongly-stockaded position five Europeans and 260 blacks to form the "rear column." It was necessary to divide the force into two columns, as the greater portion of the baggage and a large number of the men had not yet arrived, owing to the insufficiency of the Congo flotilla to transport the expedition from Stanley Pool to Yambuya in one journey.

THE FORCED MARCH THROUGH THE FOREST.

Emin's cry was so urgent that Mr. Stanley preferred to risk a quick advance by forced marches with a light column rather than court a disaster by delay, and repeat our too-late experiences on the Nile. It was now that our troubles really commenced, as we plunged into an unknown forest, never before travelled through by white man or Arab. This forest turned out to be about the size of Germany, France, and Belgium put together, and after 160 days spent toiling in its gloomy twilight the column emerged into daylight on the plain, but only 174 souls remaining out of 389, or a loss of four men every three days while we were in the forest; and with these worn-out wretched skeletons we were going to relieve a Pasha who had a few thousand warriors, and was hemmed in by savage tribes. This was not very cheery to contemplate; nevertheless, it was with pardonable emotion that everyone expressed himself thankful for deliverance from that forest, and thought they had never seen such a lovely country as was before them. The line of demarcation between the forest and the plain was very distinct, as the forest ceased abruptly. During these 160 days we were obliged to cut our way not only through dense undergrowth and jungle, but also through hostile and savage aborigines. The dwarfs or pigmies were well proportioned, fairly intelligent, bright and cheery when tamed, but wild and barbarously vindictive in their native state. They were covered over with fine hair or fur, and possessed a sense of modesty, at least as far as the resources of the forest would admit. Their usual costume consisted of a belt of rattan cane round the waist. The mortality amongst our men was principally due to disease, wounds, and starvation. The native men always carry a bow and quiver of arrows, which they can shoot to a distance of over 100 yards with accuracy, and unless one is very smart they generally have the first shot too. These arrows are beautifully designed and worked. The heads are generally barbed, and are made from the crude iron ore in native foundries, where they have bellows and coke, and hammers and anvil. They are generally smeared with deadly poison, as was illustrated at the action of Arasheba, where every man wounded with a poisoned arrow died, except Lieut. Stairs. Poisoned wooden spikes are some times placed in the ground on the approach to a village, and these inflict barbarous penetrating wounds in the naked feet, utterly incapacitating the victim, as invariably the spike breaks off in the foot. We also lost many from desertion, and this proved Stanley's wisdom in selecting the Congo route, for if the Zanzibaris will desert in the friendless forest, surely they would do so in much greater numbers if they had started from the East Coast, where they all knew the country, and it is their habit to desert and take their rifle with them. It is this custom of theirs which has wrecked so many expeditions from the East Coast. The horrors of starvation deprived us of most of our men. For weeks we were obliged to exist by grazing on the leaves of plants, fungi, herbs, forest fruits, with an occasional plantain, and the scrapings of a forest bean which tasted like horse chestnut. We also ate Mr. Stanley's donkey. Even during our worst days, if a Zanzibari had but three forest fruits, he would readily give two out of three to his white companions. In one camp alone we were obliged to leave a white man, Captain Nelson, and fifty-six blacks, all unable to march further from the effects of starvation, and we had no means of transport for them. We marched on expecting food every day, until 23 days had passed before we were able to send back relief, and then only Nelson and three men remained to tell the tale and protect the baggage we had left. The carcases of the rest of the party lay about the camp in various stages of decay, having perished for want of food, and their bleached bones are there a monument to fidelity to duty.

SUPERIORITY OF THE EUROPEAN PHYSIQUE.

Although the Europeans and the blacks lived under the same conditions, yet the mortality among the latter was much greater. Our food was the same, with the exception of tea and coffee, which lasted us two or three years, the remaining European provisions we carried were not worth considering. All our experience goes to show that the white man can live very well in Africa, provided he treats himself properly. He should not go out there too young, and he should come home every three years. There never was a day that we could not walk down the blacks, either our own men or the aborigines of any part of Africa which we passed through. Undoubtedly the Zanzibaris carried loads, which we did not; but then they are accustomed to that work from their youth. Neither the Nubians nor Somalis were obliged to carry loads. Yet out of 13 Europeans engaged on the expedition 11 emerged out of Africa safe and sound, one was murdered, one died, and seven marched across Africa. Out of 623 Zanzibaris 225 returned; out of 62 Nubians 12 returned; out of 13 picked Somalis one returned. There is no doubt that the tenacity for life is influenced by education and moral pluck. We valued our lives more because we have more to live for, and "never say die," whereas the blacks, tired out by fatigue and fever, will simply sit down on the roadside and not attempt the same effort to get on and reach camp so as to be able to make a fresh start next morning, although they are well aware what will happen to them, for the wild natives follow up the track of the caravan just as sharks do a ship at sea. Each European who crossed Africa suffered from about 150 attacks of fever. The blacks also suffered from intense fever, but not quite so frequent. I noticed this want of stamina amongst the Egyptians and Nubians on that memorable march across the Bayuda Desert to reach the Nile at Metammeh, when the only men I saw fall out from fatigue and thirst were black men. The British soldier of mature age showed much more staying power.

THE VALUE OF VACCINATION.

Now, however, our staying power was to be taxed or tested in another way for which we did not bargain. We had reached the Albert Lake on the 13th December, 1887, at the very point and about the very date when Emin expected us, according to communications which he had received from Zanzibar. Yet we were obliged to stay until the 8th of May, 1889—just one year and five months later—until Emin and his satellites had made up their minds to come away; and even then they were so undecided that half remained and half came away. During this interval we were not idle, as we returned into the shades of the forest, built a fort, and farmed some acres of ground to keep off hunger, while Stanley returned alone to bring up the rear column, which was the grandest but saddest episode in the history of the expedition. On his arrival at Bangala, he found only one European present out of five whom he had left, and only 97 men out of 276. Two valuable officers were dead, both Barttelot and Jameson. Smallpox was raging, but owing to the precaution which we had taken by vaccinating our men on board ship, only four out of the entire force were attacked, and none died. Whereas the mortality amongst the Manyuema and camp followers, who had never heard of vaccination, was immense.

EMIN PASHA'S POSITION.

It has been written that we brought Emin Pasha away against his will, but this is a gross libel. Many a time I have heard Stanley say that our object was to carry relief in ammunition, and not to bring Emin away. I myself, in those days, thought the remark inconsistent, because we would have nothing to show when we reached the coast, but Stanley would complain that we had barely enough men left to drive through to Zanzibar ourselves, without the responsibility of looking after the Pasha and his helpless followers. But what was poor Emin to do, and where was he to go, if he did not avail himself of our escort to the coast? His own soldiers had actually made him a close prisoner, and were taking him north with Mr. Jephson, probably to kill them, when they were driven back by the providential advance of the Mahdi's forces.

Then they changed their tactics, and designedly allowed him to visit our camp at Kavalli, so that by their cunning and stratagem they might capture the entire relief expedition with all ammunition.

HIS CHARACTER AND ATTAINMENTS.

Emin is a wonderfully interesting companion, but he had lost all control over his province; he is excessively good-natured and extremely polite; a great scientist, and qualified to practice medicine. He speaks twenty-two languages, thirteen of which he can read and write; and without the least hesitation would tell the scientific name of any insect, bird, or plant which might be brought to him. His people were useless—troublesome and diseased, aggravated by intemperance, vice, and misconduct. He has often pointed out some of his chief officers, and told me their histories of crime. Many of them were exiled convicts from Egypt as murderers and robbers, and these were the men on whom he was obliged to depend, and for whom so many gallant lives were sacrificed. They preferred to live coarse luxurious lives in the equatorial province, rather than contribute towards earning an honest livelihood in Egypt. Besides achieving the object of the expedition, some very interesting geographical problems were solved, and a country opened up which ought to be a mine of wealth for British enterprise, valour, and industry. The money used in barter with the natives consists principally of beads and cowries for ornaments, brass rods, calico, and fancy coloured goods. Civilisation will advance with the railways, and until they are made Africa will never be opened up and the slave trade will never cease. Ivory hunters have no other means for the transport of their tusks than on the backs of slaves. Of course, if you can stop ivory traffic then you can stop the slave trade, as they are synonymous.

On the 4th of September, last year, the relief expedition arrived at the coast and that very same evening Emin, who had not tasted civilisation for fourteen years, met with an accident which nearly cost him his life. He fell headlong through a window, a distance of 30 feet, on to his head, and fractured the base of the skull. However, he survived, and, I regret for his own sake, has returned again a wanderer into Africa. I received a letter from him a few weeks ago, and I find that he is nearly well again. The Egyptian subjects whom we escorted out have returned to their own country.

Thus ended the relief expedition after exactly three years' hard work in Africa, during which time each member is satisfied in his own conscience that he has done his duty, and that is the most gratifying consolation one could have. We are all unanimously indebted to Stanley's undaunted courage and resource for its completion; and when you have read "In Darkest Africa" you will be better able to judge if anything has been gained by the expedition or whether "the game was worth the candle." Never was there a work begun, carried out, and ended from more unselfish and humanitarian motives by more gratuitous and self-sacrificing means.*

HONORARY DEGREES FOR MR. STANLEY AND SURGEON PARKE.

On Tuesday afternoon, at a Convocation held in the Banqueting Hall of the Castle, at Durham, the honorary degree of D.C.L. was conferred by the University upon Mr. Henry Morton Stanley (in absence) and Surgeon Thomas Heazle Parke, in recognition of the services rendered by them in connection with the Emin Pasha Relief Expedition. The Sub-Warden (Professor Pearce) presided, and there were also present Canon Farrar, Canon Kynaston, Dr. Philipson, Dr. Heath, Dr. Page, Dr. Plummer, Rev. A. Robertson, Mr. J. R. Redmayne, Mr. F. B. Jevons, Mr. E. J. Marshall, Rev. J. R. Short, Mr. A. Beanlands, Rev. J. T. Fowler, Mr. W. K. Hilton, Mr. P. J. Harwood,

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* We have pleasure in publishing these notes of an address to the Tyneside Geographical Society by Surgeon-Major Parke, by the permission of that Society.

&c. There was a large and fashionable gathering present, the attendance including a great many undergraduates. Surgeon Parke, who is the guest of Dr. Philipson, at Newcastle, travelled over to Durham with that gentleman, and as he entered the hall was received with cheers by those present.

The Sub-Warden having opened the Convocation, and proctors having made the requisite declarations, the Sub-Warden said : It is proposed to confer the honorary degree of D.C.L. on Henry M. Stanley. Is it the pleasure of the house to assent to this proposal ?

The assent was denoted by hearty cheering, on the subsidence of which the Sub-Warden said : In conferring this degree the University desires to show its appreciation not only of the indomitable perseverance, courage, and wisdom with which Mr. Stanley and his band of devoted companions—one of whom we have amongst us to-day—overcame difficulties apparently insurmountable, not only of the value of his contributions to geographical knowledge, by which half a continent has been laid open, mapped, and delineated, but also of the services which he has rendered to the causes of civilisation and religion. The development of honest, legitimate commerce, the large and growing extension of Christianising efforts, and the true progress of the races of Central Africa towards a higher and nobler standard of humanity, owe much of their existence and vitality to the unwavering] purpose and happy achievements of one of whom Englishmen will always be proud. By the authority of this University I admit Henry M. Stanley to the honorary degree of D.C.L. in his absence.

The Sub-Warden then announced that it was proposed to confer the same degree on Mr. Surgeon Parke, and again assent was given in cheers.

Surgeon Parke, who wore his uniform as surgeon of the 2nd Life Guards, with the decorations enumerated below by Dr. Philipson, in addition to the cap and gown of a Doctor in Civil Law, then advanced up the room, amid great cheering, and was met by

Dr. Philipson, who introduced him to Convocation in the following terms: Mr. Sub-Warden and proctors, I present to you Thomas Heazle Parke, surgeon of the 2nd Life Guards, licentiate of the King and Queen's College of Physicians of Ireland, honorary fellow of the Royal College of Surgeons in Ireland, the recipient of the gold medal of the British Medical Association awarded for distinguished merit, medallist of the Royal Geographical Societies of London and Antwerp, honorary fellow of the Royal Scottish, Tyneside, and Belgian Geographical Societies, the medical officer of the Emin Pasha Relief Expedition in Central Africa under the renowned explorer, Henry Morton Stanley, to be admitted to the honorary degree of Doctor of Civil Law. Surgeon Parke has served on the Army Medical Staff for nine years, and his career has been distinguised from its commencement. He has been engaged in perilous undertakings, requiring for their fulfilment the qualifications of fortitude and courage. In 1882 he was engaged in the Egyptian campaign, subsequently in the Nile campaign, and is one of the survivors of Abu Klea. When in charge of the cholera camp at Tel-el-Kebir, when two-fifths of the English soldiers were prostrated by disease, he gave proof of his ability and courage, and was complimented by Surgeon-General Irvine. He possesses the Egyptian medal, with clasp, the Khedive's star, the brilliant star of Zanzibar, and the third and fourth class Medjidieh. Surgeon Parke was the latest of the volunteer officers who applied for membership in the Emin Pasha Relief Expedition, and wrote with his own hand the terms of the agreement to render "loyal and devoted service" gratuitously. For three years, through the perils of the Dark Continent, he did his work most nobly. Through difficulties, dangers, and disasters which perhaps the annals of history can scarcely equal, he obtained the goodwill and esteem of his illustrious chief and his brave companions. Pestilence, war, and famine brought the opportunity for the exercise of that watchful skill, gentle patience, and sweet courage whereby another name has been added to the long roll of the heroes of the medical profession.

The Sub-Warden said: Mr. Surgeon Parke, I beg to assure you, in the name of the University, of the great pleasure with which we welcome you to become an honorary member of our body. You have ennobled a noble profession by the manner in which you have illustrated its beneficent power. So long as men read the story of the strange and marvellous journey into the dark and unknown continent, so long will they admire and honour the devotion and skill and absolute self-effacement happily so frequent in your glorious profession, but never more strikingly shown and illustrated than by Surgeon Parke. You have well sustained the reputation not only of an Englishman but of an English doctor. By the authority of the University I admit you to the honorary degree of D.C.L.

The Sub-Warden then shook Dr. Parke by the hand and the ceremony concluded.

THE ENGLISH AND THE GERMANS IN AFRICA.

CESSION OF HELIGOLAND.

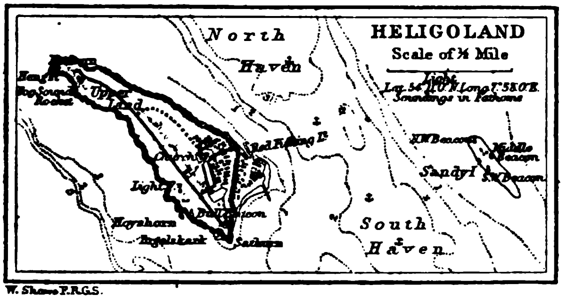
The following notes from the *Manchester City News* will be of interest in reference particularly to Mr. Stanley's second address in the Council Chamber:—

For some time past it has been recognised that it was to the mutual advantage of England and Germany that the sphere of influence of each country in Equatorial Africa should be properly defined, so that, as far as possible, the dangers of disputes should be removed. Lord Salisbury has now concluded an agreement with the German Government, subject to ratification by the Parliaments of both countries. The agreement, in addition to matters relating to Africa, provides for the cession of Heligoland to Germany. It has given the greatest satisfaction in Germany.

As to the African portion of the settlement, what happens is this: We gain an absolute protectorate over Zanzibar and all the territory occupied or claimed by the Germans north of that point, including the sultanate of Vitu and the territory between it and the Juba. This gives us control of the east coast from Zanzibar to Abyssinia, about five hundred miles in length. Further south, where the original German claim comprised the whole of the "hinterland," or territory between their sphere of influence on the east coast and the Congo State in the west, that claim is surrendered as to the territory between the Congo and Lakes Tanganyika and Nyassa. North of that point, however, up to the first degree of south latitude, Germany is allowed to carry her borders up to the Congo State. Finally, down in the south-west, where the question is the eastern boundary of the German west-coast possessions, a further concession is made by the shifting of the boundary line from the twentieth to the twenty-first degree of east longitude, and along the eighteenth degree of south latitude up to the Zambesi. The most serious part of these concessions is undoubtedly that of the territory between Victoria Nyanza, Tanganyika, and the Congo State. By the change the British territories in the South are finally severed from the Nile and the Nyanza region, but Lord Salisbury has secured a free and unfettered right of transit for British subjects and goods across the German isthmus thus interposed. He has also saved the Nyassa settlements and the much-talked-of "Stevenson road."

Heligoland is an island in the North Sea, about twenty-five miles from the mouth of the Elbe. The area, inclusive of the adjacent island termed "Sandy," is three-quarters of a square mile. The population, as taken at the census of 1881, was 2,001, and is now about 2,200. It is the smallest organised British colony. Heligoland was surrendered to the British arms in 1807, and formally ceded to Great Britain by

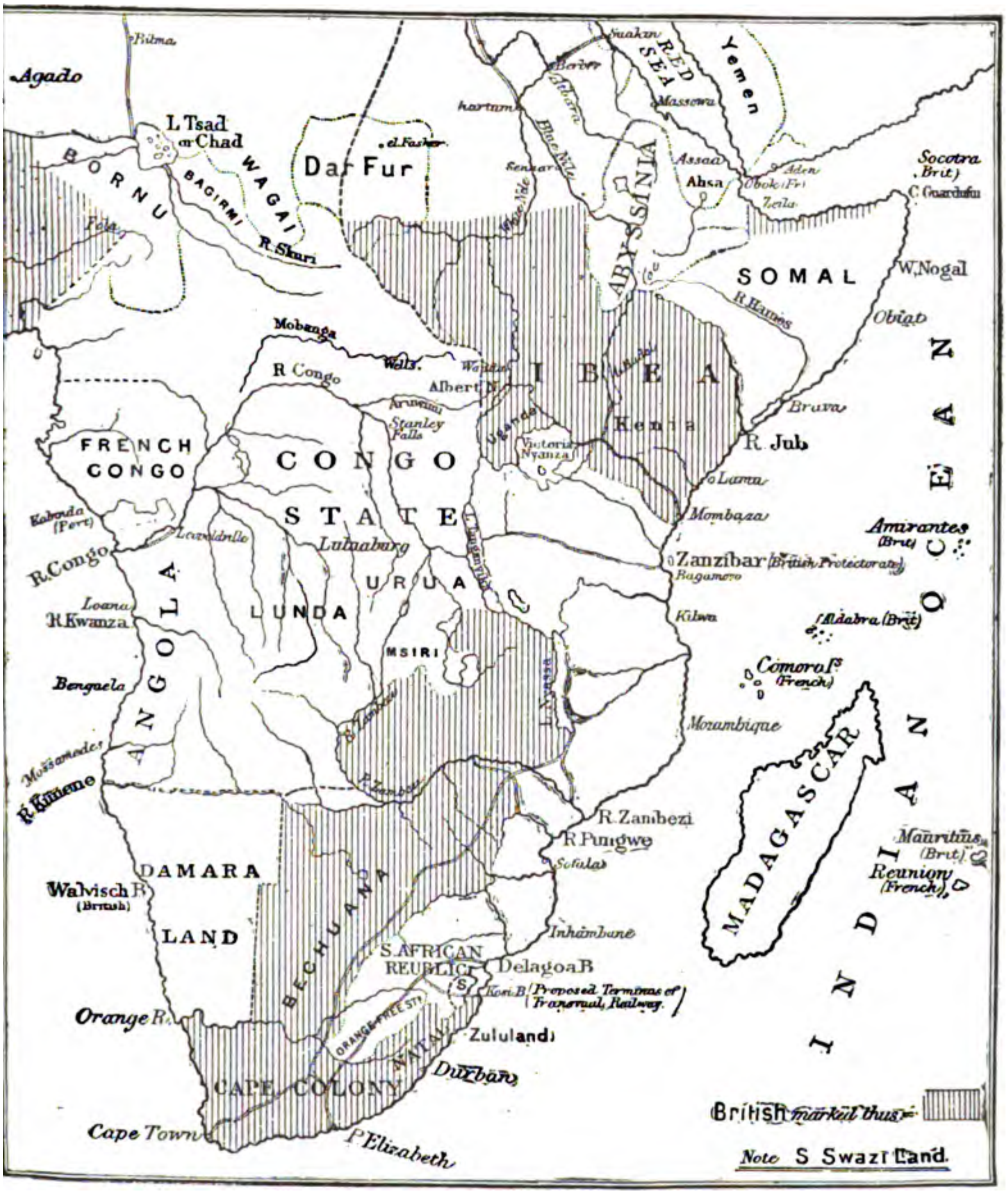
Denmark in the Treaty of Kiel, 1814. It was formerly much larger than it now is—in fact, the two islands, now nearly a mile apart, formed one up to 1720, when a storm separated them. It is on Sandy Island that the sea-bathing, perhaps the finest in the world, takes place. The main island is a red sandstone cliff about 170 feet high, with (but in one spot) inaccessible sides. The town is divided into two parts, the Unterland on the beach containing the Government Bathing Establishment (hot and cold swimming baths), Conversations House, theatre, coastguard barracks, hotels, &c.; and the Oberland, to which access is now obtained by a flight of 192 steps and by a lift worked by steam power, containing the largest number of houses, including the church, schools, lighthouse, Governor's residence, &c. From its isolated position Heligoland is wonderfully healthy, its climate being most bracing, equable, and mild—cooler in summer and warmer in winter than either England or the Continent. From 13,000 to 14,000 visitors generally come over during the bathing season, from May to October, exclusive of excursionists who flock over in large numbers from the neighbouring towns. The Heligolanders formerly existed solely by pilotage and fishing. In 1830 public gaming-tables were established, and the island became one of the most fashionable bathing-places of North Europe. The gaming-tables were abolished in 1871. The inhabitants now live mainly by fishing in the winter, and the letting of lodging-houses and the proceeds of the bathing establishment in summer. Pilotage has almost entirely ceased, the larger vessels fitted out in the Elbe and Weser enabling the pilots from these rivers to go further out to sea to seek for ships. The direct intercourse is entirely with Germany. The island is a port of registry, and had on December 31, 1888, 49 vessels, the total tonnage being 516 tons. It is a much-frequented rendezvous of the North Sea fishing fleet. The Governor is judge of the Court of Sessions, and in matrimonial and divorce cases is assisted by the chaplain. The inhabitants have a pure but unwritten language of their own, and are of Frisian origin. They belong entirely to the German Lutheran Church. Education is compulsory between the ages of six and fourteen. Three hundred and fifty-seven children attend the one Government free mixed school in the island, and are taught in both the German and English languages. There is a free public library and reading-room. The only imports subject to duty are alcoholic liquors and petroleum. Connection with the mainland is maintained by steamers leaving Cuxhaven twice a week in winter, and by twenty-one steamers a week from the neighbouring ports in the summer months. The island is also connected with Cuxhaven by telegraph. Both English and German coins are current and legal tender. There are no private banking establishments, but a Government savings bank was instituted in 1888, and has now £874 deposited.



W. Shaw F.R.G.S.

By the agreement no compulsory military service will be imposed on any living inhabitant.

MAP TO ILLUSTRATE THE ANGLO-GERMAN AGREEMENT.



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THE ANGLO-GERMAN AGREEMENT.

Mr. Stanley, speaking at Newcastle-on-Tyne, when he was presented with the freedom of the city, referred to the Anglo-German agreement. He said he was as much electrified as any of them when he saw that what a legion of explorers had been unable to do, and any number of armies and missionaries unable to effect, their Premier had by a stroke of the pen not only secured 150,000 square miles of territory, but half a million square miles more. He now saw prospects whereby English people could breathe in the heart of Africa. The best feature of the arrangements was that neither England nor Germany were compelled to retire disgusted. He was quite sure that if he could muster the chiefs of the country who had fallen under the ægis of the British Empire by that agreement, they would say "the day was a red-letter day in their calendar, and that the day of days for them had come." One advantage gained was that Germany and England would be mutually interested in securing the freedom of the Zambesi and Shire rivers, and so the Portuguese difficulty would disappear. He looked forward to the construction of a railway from Mombasa to Lake Victoria, and the navigation of that great lake by steamers, the result of which would be advantageous to this country and the native races. In the new territories were included the glorious tableland in the heart of Africa, where English people could breathe. He had examined very keenly what the size of that country was, and he found it measured 900 miles at the greatest length, and 700 miles at the greatest breadth—a very compact piece of territory. As to the cession of Heligoland, he had never been there; but the Germans had a big hold upon Zanzibar, and all that had been handed over to the protectorate of Britain. There was a population of 380,000, a trade of two millions, and the island of Pemba, alone worth ten Heligolands.

"Nyasa" or "Nyassa."—Our readers will have noticed that lately we have adopted in our pages a spelling of the above word which to some of them will be unfamiliar. We will now give our reasons for this change. We profess to spell all African words and names *phonetically*—that is, according to strict phonetical principles, as these are understood and laid down by the promoters of the phonetic movement. These principles forbid the double "s" in any word the syllables of which end with a vowel and begin with a consonant. In such words, there is no place for "ss" phonetically. Now all African syllables *end* with a vowel, and there is not a single exception to this rule. The word under discussion is a two-syllable word, divided thus—"Nya-sa." Many people mistakenly pronounce it as if it had three syllables, thus—"Ni-ass-a." But the "y" is to be taken as a consonant, and very closely joined to the "n," so that the three letters "n," "y," "a" must be pronounced as one syllable, "nya." Again, whether the first "a" be pronounced broadly as the "a" in "father," or shortly as the "a" in hat—that is to say, whether we say "Nyā-sa" or "Nyă-sa"—the question of the propriety of "s" rather than "ss" is unaffected. If it be asked why was the word ever spelled "Nyassa," the answer is—because hitherto we have followed the spelling adopted by Livingstone and others with him, or before him, who first heard the word from natives, and then, not troubling themselves about strict phonetic principles, wrote it down according to the spelling adopted in English words in which the sound of the "a" and the "s" together was the same. Such words as "massive," "classical," "passage," do indeed have in them exactly the same sound as is found in "Nyassa," yet *phonetically* they would none of them have a right to "ss." The reasons why this spelling is abandoned having thus been given, it may be added that we of the Universities' Mission are only going back to the correct phonetic spelling of the word after the example set by the Free Kirk and Established Scotch Missions on the Lake, who for some time past have, in all their publications, both in English and the native languages, adopted the correct spelling. To persist in what is really error, after all others have long since corrected themselves, would be, of course, to stultify ourselves in the eyes of those who know best about the subject.—*Chauncy Maples, in Central Africa for December, 1890.*

ZULULAND: PAST AND PRESENT.—*(See Map.)*

By Miss H. E. COLENSO.

[Addressed to the Members in the Memorial Hall, Wednesday, October 1, 1890.]

IT is just three years and a quarter since the territory now called Zululand was finally and formally annexed to the British Empire, on the 19th May, 1887. A twelvemonth later a "rebellion" was declared to have broken out there, and by the end of a second twelvemonth—by May, 1889—the principal Zulu chiefs and headmen were in gaol, condemned by so-called English law to terms of imprisonment varying from five years to fifteen, for high treason against the Queen of England.

Zulu names, I know, are a stumbling-block to English mouths, and I will only ask you to-night to make acquaintance with the two principal victims: Dinuzulu, now aged nearly 23, King Cetshwayo's son, and heir to all Cetshwayo's troubles, and Ndabuko, now 48-9, Cetshwayo's brother—uncle, therefore, and guardian of Dinuzulu, and head of the Zulu national party. Their sentences are the heaviest, with that of another of Dinuzulu's uncles, and, since I left them in December last, have been altered to exile on the lonely island of St. Helena. It is claimed that this is a mitigation. The proposition is of value so far as it carries an admission of dissatisfaction with the original sentences; but while physically it may be more wholesome to be tethered on an island than locked into a cell, there are aspects from which this change is a heavy aggravation of punishment. Witness the proposal, lately renewed in South Africa, to make imprisonment over seas the punishment for stock-stealing, because likely to be "more deterrent to the native mind than hanging would be."

These chiefs—with their companions, still in gaol in Zululand—are the recognised heads and leaders of the Zulu people, respected by them not only because of birth, but for brain power and governing ability. Their influence with "many thousands" was urged as a sufficient reason for their being condemned to exile, before even they had been put through the mockery of a trial. Yet it is a fact—and one on which the hostile officials especially insist—that in spite of our wanton and ruthless invasion in 1879, the Zulu people generally have always been friendly and even dutiful towards the English, these imprisoned and exiled chiefs being their guides and leaders throughout.

That heavy wrong is being done, I and my fellow-colonists are now not the only witnesses; and public men of the weight of Mr. Charles Bradlaugh and Mr. R. W. Hanbury have pledged themselves (on August 12th) to the House of Commons to prove this wrong before it at its next session, and from official records.

I wish now, in accord, I believe, with the objects of this society, to give you some idea of the present geographical extent, as well as of the nature of this evil, to enable you to judge how seriously it must affect and thwart the advance of British influence in Africa.

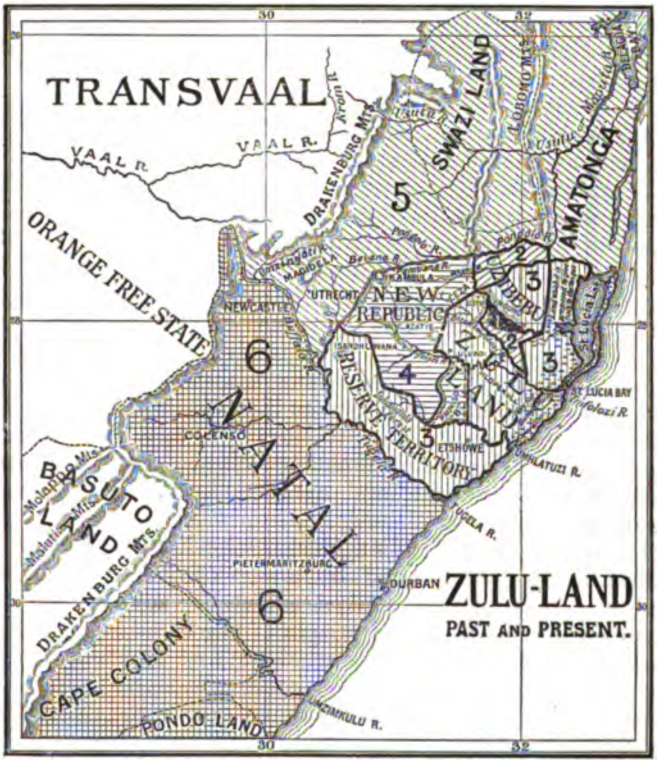
The Zulu is one of the many tribes of the same great African race of which the Amaxosa, the Basutu, the Swazi, Matabele, and Bechuana are members.

Their own belief that originally they came from the north is perhaps true, though vague, referring probably to a remote date. Some of their customs are to be found in ancient Jewish history. I have seen Zulus who, in appearance, might have been the originals of Assyrian figures on the bas-reliefs in the British Museum; and the photographed profile of a statue of one of the shepherd kings of Egypt reminded me promptly of a personal friend.

The study of language shows this race to be wide-spread. In the preface to his "Zulu Grammar" my father quotes the fact that "the same word Unkulunkulu (the Great-great One) is used under various forms as the name for the Creator all along the East Coast of Africa, from the Gallas country to Natal; on the West Coast to Damaraland, and probably even at Sierra Leone." Umlungu, one form of the same word, is that originally chosen and still used by some tribes to distinguish us white people from themselves. (Last year I heard the wretched Zulu women describe the only Englishmen whom they had met as "those wild beasts.") As far as I am aware, they have not now any common name for their own race. One set of tribes has indeed a quaint tradition of the journey south, telling how their original ancestor, finding his own strength failing, ordered his family to shut themselves into one of the huge globular baskets, like those still used for storing grain; how he fell back dead, after achieving one mighty kick which started the basket rolling, over hill and dale, river and forest, till at last it stopped and steadied;. and how, when those within ventured to look out, "they found themselves in this country where we now live," say some of their descendants, who are still nicknamed "those belonging to the basket."

To come to somewhat more modern times, and to South-east Africa in particular, the Zulus can count their chiefs back through twelve generations. Mr. John Mackenzie, an authority on the Bechuana tribes, gives a table of one branch of their chiefs for seven generations, and of another (the Batlaping) for

SKETCH MAP.



NOTES.

No. 1.—Land allotted to both hostile parties, Cetshwayo's and Zibebu's, 1883.
No. 2 (lower).—Cut off from Zibebu because inhabitants hated him, 1883.
No. 2 (upper).—Placed under Zibebu in exchange for 2 (lower), 1883.
No. 3 (upper) with 1 and 2 (lower).—Placed under Zibebu, 1879-82.
No. 3 (middle).—Somkeli's portion of coast district.
No. 3 (lower).—Reserved from Cetshwayo in 1883.
No. 4 with 2 (upper).—New Republic, 1886.
No. 5.—Claimed 1861-78 by both Zulus and Boers.
No. 6.—Colony of Natal.

Note.—The shading on Cape Colony and Pondoland should be absent.

eleven, taking them back, as he computes, to about 1630, when in England the struggle between King and Parliament was just beginning.

Among uncivilised races the violent taking of human life is, doubtless, thought of relatively less importance than is the taking of European life among us now. On African life, alas! we seem to set a lower value. And the fact that the African tribes allow their chiefs in this particular the same licence which each man claims for himself, may perhaps have led to the mistaken notion that the chiefs are "irresponsible despots." The opposite is the case. But very few Europeans realise the extent to which these African chiefs are the representatives of their tribes, are controlled by the will of their people, and how liable are the chiefs themselves to sudden death when they fail to interpret and express that will, if they cannot lead and guide it.

The Cape Government Commission, which inquired in 1881-2 into native laws and customs, had the unique advantage of being able to consult the Zulu king (Cetshwayo) himself, then a prisoner at Capetown. His evidence, printed with the report of the commission, shows that at the height of his power the Zulu monarch could not make laws without the consent of his great Council, and had to obey the laws when made.

The land belonged always to the tribe, and was inalienable by the chief, who held it as trustee, with a share in the use proportionate to his position; and held in trust in like manner all cattle obtained in war.

"The chief's work" of any kind, whether civil or military, was and is still performed by levies of young men, called "amabuto," a word commonly translated "soldiers," but properly meaning collections of people of the same age, whether of soldiers or workmen, of girls or of boys. The whole tribe is thus classified. This system has been called the Zulu military system. The great Zulu chief Tshaka added to it a regulation forbidding marriage to the younger regiments of boys and girls alike, until the former were, by general consent, allowed to have won their spurs. But the system itself, says the Government Commission of 1881-2 on Natal native affairs, "is of very ancient, immemorial date. It exists among the neighbouring peoples as well, among Swazis, Tongas, and Pondos, and is strictly kept up to this day by chiefs in Natal," *i.e.*, through now 47 years of British rule. Under it the young men are called out by the chiefs in "regiments," for planting, weeding, building or shifting the huts, forming their towns or villages, or for police purposes, as well as for war.

The earlier Zulu chiefs appear to have led quiet lives, or, at any rate, to have died at home, for on any great national occasion the Zulus are wont to pay a solemn visit to the graves of the first nine of them, sleeping each on his own hillside, on the site of the home in which he lived, and all in the valley of the white Imfolozi river, which may thus be called the cradle of the Zulu power. For the tenth chief was the famous Tshaka, under whom that power culminated in the beginning of the present century.

Tshaka's dominion extended, before his death, from the Pondo border, south of Natal, right along the watershed of the Kahlamba or Drakensberg Mountains; and his conquering expeditions and tributaries reached "the St. John's river to the south and the King George's river to the north, at Delagoa Bay, and far inland beyond the mountains."* The Zulu nation has sometimes been described as a mushroom growth, springing suddenly from insignificance through Tshaka's ability. A very slight acquaintance with the facts shows that long before his time the Zulus had grown into a nation, composed of various tribes, all claiming and tracing their descent from one or other of the nine old Zulu kings, and acknowledging so close a relationship that the chiefs of some of them are still forbidden to intermarry.

Tshaka's individuality, however, undoubtedly counted for much in the development of the Zulu power. Two stronger neighbours quarrelling, he protected the beaten people whose chief had formerly befriended him, and thus drew on himself the wrath of the conquerors, the formidable Ndwandwe people, one branch of which is still dominant throughout Gazaland, reaching to the Zambesi. After three years' desperate struggle Tshaka worsted this tribe, and drove its chief to the north, while the bulk of the people remained and became Zulu subjects.

Various tribes had joined in this struggle on either side. All who joined him, and all whom he overcame, Tshaka at once incorporated in his own regiments according to age. Henceforth his career and theirs was one of triumph, and though, no doubt, among the half-conquered tribes on the fringes of his empire his name was as much a terror as in some parts the English name is now, those nearer home prospered exceedingly, and many of them came to share the Zulu pride in him and in "the grand old Zulu people," as I have heard it called by their half-civilised descendants.

Such was the Zulu power when contact with the white man—the Umlungu—began to dissipate the idea of his celestial character. First came a handful of English adventurers, in 1824, whom the Zulus gave honourable welcome, allowing them to settle on the spot where now stands the town of Durban, in Natal. Next, in 1837-8, came the long wagon trains of the Dutch Boers, perseveringly crawling over the mountains in search of independence, having left the Cape to avoid English rule. Mutual distrust and terrible slaughter ensued between them and the Zulus, now distracted by internal strife between Tshaka's two half-brothers, Dingana (who had assassinated him in 1828) and Mpande (who avenged him in 1840, and whose young son, Cetshwayo, had already been named by Tshaka his successor). The Boers meanwhile had settled on a large part of the district of Natal, claiming it as payment for having sided with Mpande.

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* Sir Theoph. Shepstone, in appendix to Report of Cape Government Commission, mentioned above.

In 1843 the English Government took Natal by force from the Boers, who moved north-west to found the Transvaal Republic, and the Zulus accepted the situation because—I quote from the official report of their words spoken in 1877—"on the arrival of the English people in the country, they (the Zulus) were satisfied that just people had come near them and there would be no trouble, and that therefore no claim had been made upon the English people to restore land which was the property of the Zulus."

Thirty-five years followed of absolute peace and security between Natal and Zululand, the Governor of Natal, at the end of 1877, testifying to "the peaceful and friendly relations that have existed for so many years between the English and the Zulus." The only barrier between them had been, in the words of Sir Bartle Frere, "a river easily fordable for the greater part of the year, and not too wide to talk across at any time." This boundary, along the Buffalo and Tugela rivers to the sea, had been fixed in 1843, with Zulu consent, after Natal had been proclaimed a British colony. Very different was the position between the Zulus and the Transvaal Boers, who, not content with the enormous regions which they had appropriated beyond the Drakensberg, gradually spread out into the rich country sloping east from these mountains, right and left, cutting off the north and west of Zululand, appropriating here and there a "farm" which pleased them, from which they drove the Zulu occupants, occasionally shooting one. By 1861 these encroachments, now known as the Transvaal districts of Utrecht and Wakkerstroom, reached far into North-western Zululand; and in 1875 the Boer Government proclaimed this district part of the Transvaal, and made a futile attempt to levy taxes on the Zulus living in it.

The actual leader and guide of the Zulus since 1856 was Cetshwayo, though his father, Mpande, retained the title and dignity of king till his death at an advanced age in 1872, at which time Cetshwayo is described by Sir Theophilus Shepstone as "a man of considerable ability and much force of character, remarkably frank and straightforward," and in later, sadder days by his own brother, Ndabuko, as "a merciful prince, who shrank from shedding blood."

In 1861, and through the fifteen following years, the Zulu chiefs sent no less than eighteen separate messages asking advice of the English Government in dealing with the Boer aggressions. In 1876 the official report is that "messages from the Zulu king" on this subject "are becoming more frequent and more urgent." In that year the Governor of Natal wrote: "This Government has always impressed upon Cetshwayo the importance of preserving the peace on his part, and of settling all questions of dispute by calm representation; and this advice Cetshwayo has always received in the spirit in which it has been given, and assured us of his desire to act according to it. I have no reason to doubt that he has been and is really desirous of so acting."

Yet for nearly two years longer, the Zulus—from 30,000 to 40,000 fighting men—were left to pray in vain for our "friendly intervention," to prevent a war with the Boers, which, they said, "we wish to avoid."

Then at last, in December, 1877, English arbitration was offered. It was gladly accepted by the Zulus as a proof "that the English still wish for Cetshwayo to drink water and live;" and three English officials carefully examined the question of the western border, and decided that east of the Buffalo "there had been no cession of land at all by the Zulu kings, past or present, or by the nation," and that the land in dispute there "belonged of strict right to the Zulus."

Alas! in the previous April other English officials had annexed the Transvaal by fraud; and English minds, "for the sake of the shadow—confederation," as Mr. Froude has said, had compassed Cetshwayo's destruction and the Zulu war, which so many homes, English as well as Zulu, have such sorrowful cause to remember. And the Zulu delegates sent joyfully to hear the land award in their favour, received with it an ultimatum declaring war from England—a bolt out of the blue.

Even then the Zulus, at Cetshwayo's bidding, returned good for our evil; and, in Mr. Gladstone's words, "instead of meeting invasion with invasion, were content to wait within their own territory for the renewal of our wanton, unprovoked, mischievous, terrible attack."

At the close of the war (Sept.-Oct., 1879) Cetshwayo was a prisoner at Capetown, and the Zulu people were left stunned and bewildered without their head, rather than destroyed, great as had been the slaughter among the flower of their manhood.

The Zulu voice in the matter being thus extinguished, no more was heard of *that* boundary question. The whole of the disputed land, north and west, we added coolly to the now British Transvaal, without at all pacifying the justly angry Boers, to whom we finally returned the Transvaal, and gave them with it, quite gratuitously, this Zulu border also. In the remainder, we neither gave the Zulus our form of government nor let them have their own; but we divided the country into thirteen portions regardless of tribal limits, and regardless of Zulu feeling we forced upon the people thirteen chiefs or kinglets, called independent, but most of them mere puppets, with no claim to their new position, and no hope of maintaining it, save by the favour and countenance of English official intriguers with private ends to gain. This arrangement is known in Natal as the "Kilkenny Cats Settlement."

Had Ndabuko now been ambitious and self-seeking the Zulu story had been different, for by his white enemies' admission he was "supported by thousands throughout the length and breadth of the country." He used his influence to restrain those thousands from bloodshed, avowedly lest they should displease the English and prejudice their appeal for Cetshwayo. And he did this at a time when he himself and many others were being punished for making that appeal, by one of the thirteen puppets, with confiscation of thousands of their cattle and expulsion from their homes by fire and sword, a state of things entailing infinite misery, especially on the common people driven to hide in the forests and swamps, where, as the very Blue Books show, hunger and fever played havoc with them. But no hardships and no persecutions could stop—though they did much to hinder—the persistent entreaty of the bulk of the Zulu people for Cetshwayo's return.

At last, after three years, Zulu belief in England seemed about to be justified: Cetshwayo was released and sent home at the beginning of 1883. But the fatal mistake was committed of leaving in power those officials who had been the very agents guilty of the mischief throughout. A change of policy would have stultified them, and to prevent this they dared to alter the conditions made for the Zulus' good with Cetshwayo in England; and having received permission from the Secretary of State to reserve from Cetshwayo's rule "a small piece of land," as a location under British protection for any Zulus who might now object to be under him, *they cut off a full half*—three-eighths to the south, the whole rich country to the Umhlatuze river, thickly peopled by Cetshwayo's ardent adherents, whom they proceeded to dragoon into submission with English troops, and one-eighth they cut off to the north-east. Here, too, the bulk of the inhabitants were Cetshwayo's adherents. Here were the homes from which his own family and his brother Ndabuko, and the tribes immediately connected with them, had let themselves be driven by the puppet kinglet, Zibebu. Two sections of Zibebu's own tribe were among these victims, their tribal lands and his own being in this district, and interspersed with those of Cetshwayo's other adherents in a "useless network" if separated, to quote from a recent official report.

This Zibebu had been recommended for promotion, Sir Garnet (now Lord) Wolseley tells us, as being of "a time-serving disposition." He had accordingly been appointed one of the thirteen Kilkenny cats, and was now, in significant approval of his conduct as such, forced again as "independent chief" on this unlucky district, to the consternation of the inhabitants, and at the very moment when they were hoping to be relieved of him. Between him and some of them official documents had admitted the existence of an animosity too lively to be quite ignored, and on this ground his southern boundary was theoretically curtailed. With curious inconsistency his north-west border was extended by an equal tract, to whose inhabitants the fiat was as repugnant as unexpected. Finally, the Government surveyor sent to mark off the southern boundary varied it again, after it had been proclaimed—to satisfy Zibebu, he explains, when questioned two months later, and the reply was accepted without comment by his superior.

With such preparations trouble was inevitable. In a twelvemonth the country was in wild disorder, given up to war and famine; Zibebu rampant, aided by a knot of white mercenaries, and declared even officially to be acting "unjustifiably" and "in face of the admonitions of the Government;" while the Colonial Office repeated impotently its wish that the Zulus should be allowed to "settle their own affairs," and Cetshwayo, forbidden to "interfere," or to raise any force save "a few policemen to keep order," died of a broken heart.

He died on February 8, 1884, and with him died the promises to England, his loyalty to which had thus brought a second ruin on himself and on his people. Ndabuko now gathered up the people and drove Zibebu to take refuge with his white friends in the Reserve, after which the Zulus had peace among themselves, to be broken only by English officials in 1888.

Meanwhile, however, another trouble had beset the Zulus, with which, unaided, they were not fit to cope. A band of European adventurers, chiefly Dutch Boers from the Free State and Transvaal, but some British subjects from Natal, swarmed into Zululand, and the old story was repeated. Under cover of assisting to restore order, they raised a claim to half the land yet left to the Zulus. We had made the Zulus helpless, yet for two years and a quarter we turned a deaf ear to their prayers for help; although, in 1886, one Secretary of State declared that "the right of intervening has been fully and continuously maintained." Another Secretary of State is reported to have described the transactions with the Zulus on which the Boers based their claim as "undoubtedly of a most fraudulent character." Yet on the 22nd October, 1886, to the amazement of all concerned, England was made a party to that fraudulent transaction, and gave the adventurers the best remaining half of the Zulus and their land, on the ground that—not the Zulus, but that "*we* had allowed the case to go entirely by default" through those two years' delay.

Deputations from the principal Zulu tribes protested in every peaceful way possible against the "Zulu betrayal," as we Natal colonists call it; and in February, 1887, a British protectorate was declared over the Zulu remainder, developed five months later into full annexation to the British Empire. This was an act which soothed uneasy English consciences, while it created a new danger and pitfall for the Zulus, by converting them summarily and perforce into British subjects, and thus enabling the officials, anxious to justify by success their own fraudulent proceedings, to put the Zulus in the wrong, to denounce as treason, under the new order of things, against Her Majesty's Government the valid and dutiful and inevitable protests against dismemberment, made by the chiefs on behalf of their people handed over to the Boers.

To the rule of the Queen who had given them back Cetshwayo the Zulus made no objection. The Blue Book of February, 1887, contains the official report of the acknowledgment by Cetshwayo's brother and son of the announcement of British protectorate over them. "Ndabuko and Dinuzulu," said this message, "know that the Zulu chiefs and people and Zululand belong to the English from the time of Tshaka;" but it goes on to give notice that "they think it is their duty, by personal representation to superior authority, to make an effort to obtain restoration of the land awarded to the Boers." The opposition here was not to the Queen's authority over them, but to her casting half of them away.

This Zulu objection to being cut in two was not the only means at hand for putting them in the wrong. They had hitherto been governed by their chiefs under their own laws, unwritten but well known among them, the growth of many generations. Among official suggestions made a few months only before the annexation, we find the following from Mr. Osborn, who has been in Zululand from 1880, almost from the close of the Zulu war—at first as the only English official with the Zulus, now as the chief official in British Zululand, with the titles of resident commissioner and chief magistrate, with power of life and death, and no appeal therefrom:—

"I would point out," he says, in November, 1886, "that native law as administered in Natal is not, in many respects, the same as that prevailing in Zululand . . . It appears to me very doubtful whether it [the Natal law] . . . could be suddenly extended over the people in Zululand without considerable dissatisfaction to them, and without incurring the serious risks attaching to such conditions."

Yet, a few months later, with British rule, that very Natal native law *was* "suddenly extended" over the Zulus, with eight Blue Book pages of exceptions and additions into the bargain!

The official announcement of the annexation itself was made to a fraction only of the Zulus on the English side of the new boundary line. Bear in mind that the Zulus have no Press, cannot read nor write in any tongue, and that the jargon in which most Europeans address them—including many certified Government interpreters—they call "the white man's tongue." The new laws have never been promulgated to this day, and all this complicated machinery, with its endless possibilities for putting the Zulus in the wrong—with pass laws which forbade crossing the new boundary line, to visit a relative, or to court a sweetheart, without paying 1s. and publicly stating one's errand—with retrospective jurisdiction which enabled an official favourite to bring forward cattle claims dating from 1882, from the state of wild confusion preceding Cetshwayo's return, and to recover them with interest—all this machinery was entrusted to seven Europeans, whose best excuse is that they were ill-trained and uneducated, among whom the pass-laws were enforced by flogging without trial; the same means were used to endeavour to extort evidence in criminal cases; tribal jealousies were fomented instead of being soothed; and arbitrary cattle fines were levied by raiding parties threatening kraals, frightening the women, and knocking down the men as though the police had been a hostile force.

The Zulus on the British side of the line are now officially reported to number 137,000. Six of the seven exasperating officials were alone amidst them, save for the police, a few half-drilled natives—100 in all, with two or three white leaders; and it is nothing less than overwhelming proof of Zulu loyalty to England that through a whole twelvemonth of their experiments not one of these tyrants was even molested—that "all is quiet" are the words closing the report of a successful official raid in which 300 head of cattle had been swept off the country-side in general, by way of levying half the number from two individuals. The story of this raid was told in the witness-box by an officer of the English army who had been present unofficially.

One last outrageous experiment remained to be made. The Zulus had sent messengers, trudging for the most part on foot for over 200 miles, to complain to the distant governor of this cattle-raid, and of other violent and lawless official acts, not omitting their perennial protest against the fraudulent land agreement between the English and the Boers—for "I have never understood," the chief Ndabuko had said on a former occasion, "that I am forbidden to bring to the notice of Government acts oppressive against the people of the Government."

Alas! the very Governor to whom they appealed was himself responsible for the whole arrangement! He referred the Zulus and their grievances to the chief magistrate, the very official impeached, while he condemned their message to himself as "very foolish and disloyal," and emphasised the position by adding arbitrary cattle fines (100 head), without trial, to those already inflicted, and he became a party to an act which he had soon to admit was a blunder, and which in any case was a crime. Sir Arthur Havelock, with the advice of the local officials and the permission of the Secretary of State, authorised the return of Zibebu to Northern Zululand, for the reasons expressed, that "the Zulus appear to be far from satisfied with the recent settlement of their country, and will, in all probability, cause some trouble yet;" that Zibebu and his followers would form "a real effective coercive force" in the hands of the Government; but also—with quaint inconsistency—that this loyal and dutiful chief was otherwise likely to "go without leave, unless forcibly prevented," *i.e.*, that he was capable of shaking off "the restraining hand of the Government," the only thing, it was asserted, preventing his inflicting "frightful retaliation" for his former defeat on Dinuzulu's people. It is significant of Zibebu's real want of influence among the Zulus that he did not attempt this vengeance until secure of official support.

For the three and a half years elapsed since their defeat, Zibebu and his colleague Sokwetshata, with their followers, had lived on locations allotted to them under the wing of the then resident-commissioner, now chief-magistrate at Etshowe, in which they had not been molested. That Zibebu had represented the disturbing element was proved by the fact that after his expulsion the Northern Zulus had, at any rate, peace among themselves, immediate and unbroken, till the trouble which I have yet to relate. The expulsion was in 1884. Within six months it was admitted that the northern district was fast becoming thickly populated again by Dinuzulu's people; all the inhabitants who chose to remain, no matter which side they had fought for, having been encouraged by him and Ndabuko to settle down in peace.

In 1887 Dinuzulu and his people were annexed and officially declared subjects of the Queen, and in December of that very year Zibebu was sent up to have his revenge upon them.

The Governor called it "repatriation," and publicly, in person, told the Zulus that he returned the two chiefs to their own old tribal lands only, to interfere with no one. Those very tribal lands—a mere "network" in any case—that Governor had himself given just a year before to Dinuzulu's people. They were long since built over and planted by others; and the whole district was crowded with those who had left Boer rule and settled where they were, with the Governor's express permission, to be under the Queen with Dinuzulu.

The chief-magistrate simplified the question of the network of tribal lands by varying the Governor's order, and sending Zibebu to take possession of the whole district from which he had been driven in 1884. Zibebu himself and the local resident magistrate took this to include even the district where, in 1882, reconciliation with Zibebu had been officially held to be impossible; and the inhabitants were not even given notice to quit.

The two returning chiefs and their men (Zibebu's 700, soon afterwards joined by 400 more), leaving their women and their stores of grain behind, were sent off together as an armed force, carrying guns and assegais, and no food—a fortnight after the first announcement that they were coming. After one day's journey, Sokwetshata's party reached their destination, and were at once used in a warlike attack, led by their magistrate, on the villages of two chiefs who had neglected to pay their respects to him, and who were now arrested and sentenced to some months' hard labour. As they had helped to drive out Sokwetshata in 1884 this looked like permitted revenge.

Zibebu's party had gone on with the white men sent to accompany them. He reported, after another day's march, that they had arrived (he dates from the "tribal land" of quite another tribe); that Zibebu had "not been met by a single friend," and was "now in the midst of thousands of enemies with about 700 men (soon raised to 1,100) and no food."

The thousands of enemies—especially their leaders—were supposed to be already "rebellious." Zibebu's "repatriation" had been urged on this very ground, to form a "real effective coercive force" against them. Yet the thousands made no resistance when 800 of their number were summarily turned out of house and home to accommodate Zibebu's men, who insolently trampled down their growing crops and took possession of their stores of grain; while delay on any of the victims' part was punished as "contempt of the magistrate's order," with flogging, with wholesale seizure of cattle, and imprisonment with hard labour. One such—the chief of an evicted tribe—I used to see daily in a gang with similar unfortunates, guarded by armed men, and working out his sentence by carting manure and hoeing crops in the private grounds of the magistrate who had condemned him.

Eight hundred people the officials admit that they "removed," and add that others removed "voluntarily" at Zibebu's approach; and that "people who would not acknowledge Zibebu as their chief were ordered to move out of the district"—their own district and their own tribal lands!

We can account for 3,800, and we can show that of these some 1,200 were driven across the border to Dutch rule; that some

1,100 sought shelter among the rocks and woods of their own district; and that some 1,500 more crowded in among friends in the corner left to Dinuzulu. Yet there was no collision, and for six months but one isolated act of violence; and the only possible explanation lies in the strong influence over their people, and absolute loyalty to England, of the chiefs for whom Her Majesty's Government has found no better use, and no higher reward than a twelvemonth's shameful imprisonment, and now—exile to St. Helena. The single act of violence occurred three months after Zibebu's arrival, when two of his men were killed by three of Dinuzulu's evicted people, one of whom has been hanged, while the other two are in gaol for life in consequence.

With this one exception no one for six long months could be seduced into treading on the tail of Zibebu's coat, in spite of his patrolling the country, till the very official reports themselves caused the distant Governor to remark that what was represented to be "the assembling by Ndabuko of armed forces with the intention of disturbing the peace" might be accounted for by "the sudden appearance of Zibebu's force of over 1,000 men within five miles of Ndabuko's kraal," and that it would be "difficult to persuade Dinuzulu and his friends that the Government is impartial with respect to them and to Zibebu and his followers," to "disarm Dinuzulu's suspicion that the Government is combining with Zibebu for his destruction."

Instead of retaliating, the chiefs sent in the fourth month to complain to the Governor that "the magistrate did not abide by the Governor's orders" as to Zibebu's tribal lands; that all Dinuzulu's people are in distress owing to Zibebu's lawless acts; Dinuzulu cannot think it possible that the Governor is aware of them."

It is not easy to see what right the Governor had to expect anything but mischief from his own arrangements; but his reply to this message promised the chiefs redress, acknowledging that they had been wronged, and in contravention of his orders. And this reply was entrusted to me as well as to the Zulu messengers. But the redress was left in the hands of the mischief-makers.

At last Zibebu patrolled once too often. He set out with some three hundred men in one direction, and turned up in quite another at daybreak, at the little group of five or six huts to which Umsutshwana, one of the few left alive of Cetshwayo's old councillors, had meekly retired on being evicted with a large part of his tribe from their own lands. He had taken a leading part in driving out Zibebu in 1884. An old grandmother shall tell the story, as she told it in court, sitting flat on the floor with a baby grandchild beside her.

"I know Umsutshwana," she began. "At the time of his death I was at Ntshuku's kraal. I was there because we had run thither for protection, when we were running away from Zibebu. Umsutshwana belonged to the Government—that was the reason why we went to him. I slept outside the kraal fence. It is quite a small kraal. On the night before Umsutshwana's death my elder daughter and her three daughters were with me there. My younger daughter was there also with her three children, of whom this is one. Her elder child was not five years old. Early next morning an *impi* (war party) came and surrounded the kraal. It killed my eldest daughter and the child of five. It was stabbed in the thigh, and then it crawled, when it's mother fell, from off her back to the embers by which we had been. It came and sat beside us, and a young man came up and stabbed it to death. I heard the *impi* cry *watshetsha* (Zibebu's distinguishing cry). Beside my daughter another woman fell. As to Umsutshwana he was shot; the men who shot him were Zibebu's. When he was shot I heard him cry out, 'Oh! alas! I am dying, and I don't know for what sin.' I heard the men who were killing him cry 'Ji' (a sign of triumph at the death of anything hunted). Then Zibebu rode up fast on horseback, at the time 'Ji' was cried, and jumped over Umsutshwana and back again, being then on foot. Then the *impi* went off, driving the cattle with them. They took away also women and children. They said that I could remain. What was the good of taking one so old as I was?"

The old woman's story is fully confirmed, and Zibebu does not deny the fact. His *impi* swept on, seizing cattle, and killing ten men at other kraals in the course of this "patrol."

The chiefs had just received my assurance that I believed the Governor had spoken in good faith in sending them that friendly message, and this cannot but have strengthened their belief that their persecution was unauthorised. They determined to stop Zibebu's patrols on old men, women, and children. Gathering quickly some 4,000 men they routed him at a single blow, proving their loyal intention in the very act by respecting and avoiding the magistracy, not 1,000 yards from Zibebu's camp, with one of the flogging magistrates inside it, and sixty firearms in full play in support of Zibebu against them.

Although, too, that magistrate had, just three weeks before, led a party to attack themselves in the only refuge now left them in British Zululand, among the rocks and woods and sleet of the Ceza Mountain, and had killed some thirty of their followers without any excuse at all. The advance of this force had been observed from the mountain, and first sending out two peace messengers, who met it and were stabbed by the Government native contingent, the chiefs fled, driving the bulk of their followers before them up the narrow passes, and some miles over the Dutch border.

The magistrate's party had come nominally to serve six warrants of arrest—four on evicted headmen, for having objected verbally and delayed before turning out for Zibebu, and for other "contempt of the magistrate"; the two remaining on Dinuzulu and Ndabuko themselves, for cattle stealing—a ridiculous charge, since dropped, the meaning of which was that some of the starving people had begun at last to get out of hand and to seize cattle (often not without claim to them) from their neighbours; and Ndabuko had been sternly warned, soon after the annexation, not to interfere, but to leave such cases to the magistrate.

Finding their victims flown, the guardians of the law, the advance-guard of seventeen mounted police with a white leader, enforced its authority by firing right and left into what stragglers they could find, killing thirty out of 150 who were hiding—trying to escape—crying, "What have we done?" The official in charge stated, ten months after, in the witness-box, that he had not yet made up his mind whether on that occasion he had been acting in a civil or military capacity. And the stragglers, desperate, turned and fought in self-defence, till the news reached those above, who streamed down as they heard it, and joined in driving off the assailants, killing two, but only till Dinuzulu could get down and call his people off, out of respect for the Government which these assailants misrepresented. This is not only our Zulu version. It is the only version which fits all the facts as they were brought out at the trials, and it is the version to be gathered from the evidence of hostile witnesses, one of whom also put into our chiefs' mouth the words, "We are not fighting against the Queen."

The experiment of Zibebu's return had failed to make the Zulus rebels, but it had succeeded in creating a disturbance which might be visited on them. English troops were sent to "restore peace and order." They found that the chiefs, with the bulk of their men, had fled from British Zululand without striking another blow, and they "pacified" the hapless people left behind by means of a mixed column of troops and auxiliaries, of which Zibebu and his men formed a part, in a manner so shocking that to this day civil and military authorities throw each the disgrace of it upon the other. By burning of huts and corn, by the shooting down of unresisting men, and the wholesale violation of women. Three hundred wives and daughters of Dinuzulu's people were taken prisoners by British officials and handed over to Zibebu, who distributed them amongst his followers. Seven months after I paid ten shillings through a magistrate's office to recover one such, with her unborn child, for her own husband, after which a general order was made for their release.

Before they fled the chiefs had appealed again to the governor, receiving now the reply that he could not consider the grave charges which they brought against the officials while they remained in arms. They had taken refuge among the thousands of their own people in Dutch territory, and they came back voluntarily, by my advice and Mr. Escombe's,* to impeach the persecuting officials for their people's sake, and to challenge them to the full inquiry which more than one utterance of the governor himself had given us the right to expect. The result was the shocking mockery of justice and of English law against which I am now appealing to the public conscience of England.

The so-called trials themselves lasted nearly five months, from November, 1888, to April, 1889. I was present throughout, as I had promised the Zulus. But in the first case (undefended) the Crown Prosecutor warned me that it was a mere figure of speech to call myself "the prisoner's friend." At any rate that prisoner had no other there, for his best friend, Mr. Escombe's representative, had withdrawn from the defence, as the strongest —the only sufficient—protest open to him against the court's indecent refusal to allow us time even to collect our witnesses.

The prisoner, a chief named Somhlolo, was condemned to five years' imprisonment with hard labour, for high treason, on a mass of unsifted hearsay statements. The sentence on him found him guilty because, in so many words, he had joined the other chiefs whose cases had not yet been tried.

This sentence, delivered in November, 1888, on the first case tried, vitiates the whole subsequent proceedings of the court, which could only defend its own iudgment by finding the other prisoners guilty of the same offence.

Much remains to tell of these trials, of which, with all their curiosities of injustice, we have full records.

Much also of disturbances in other parts of Zululand, each referable to a set of circumstances totally inconsistent with treason, and perfectly consistent with another cause—the fear of Zibebu backed by the officials—and each contributing to the band of victims, some of them grey-headed old men, now in Etshowe gaol. Then there is the present condition of Zululand, where it is conclusively apparent that the local officials can do no wrong, and that no one who takes exception to their doings can be right. They are therefore having things their own way, and are preparing fresh mischief by rewarding native parasites for services during the disturbances by giving them the cattle of the victimised Usutu†—by forcing in among the Zulus just those Natal natives who have been recently used against them, *e.g.*, as native levies, in the revenge I have mentioned—forcing these men in as chiefs and officials, conquerors, instead of taking care that the incomers should be chosen from among the many free from such drawbacks, and that they should appear as friends asking the consent of the tribe whose land they are to occupy.

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* A leading Natal lawyer and politician.

† Usutu was Cetshwayo's distinguishing cry: now his son, Dinuzulu's.

They boast of the money in their treasury, but omit to say how much of it is hut-tax paid for last year by starving Usutu for the sites of their huts burnt by the Government forces, and for their crops burnt and trampled where not carried off by these licensed robbers; or how much of this money has been procured by forced labour, by forcing out the Usutu in gangs to work on Government railways outside of Zululand, as was the case whilst I was there. The boast at any rate disposes of the pitiful excuse which has met me more than once, that we cannot afford to pay better men to govern the Zulus. But it is entirely beside the mark as an answer to our impeachment, because, if our story is true, any appearance of prosperity and contentment must in the nature of things be deceptive. It is not in human nature to be or to become content with conditions permitting such atrocities, and the charges that we bring do not rest on my assertions, they are already proved out of the mouths of the officials themselves, and from records officially prepared.

The Zulus' hope has been that their story may yet reach the ears of those who once, in 1883, by giving them back Cetshwayo, gave them ground for believing that England recognised their loyalty and regretted the wrong done them in her name. But under present circumstances even that hope must soon vanish, and the longer the Zulus are left to brood over their wrongs the deeper and more bitter will grow their sense of unmerited suffering and disgrace. And the feeling will not be confined to the little corner of the map which we now call Zululand, nor even to those wide portions of the Transvaal and Natal still peopled by thousands of Zulus. In the words of the then British Commissioner for South-east Africa, writing of the Zulu question in 1882, "We must not leave out of account the native populations and races of South Africa outside the Zulu country. They are not indifferent to what is passing. They will be affected some of them directly, others but remotely, by our action in this matter, whatever that action may be. They will pass their judgment on it, and their judgment, and the effect that our action will have upon them, we cannot afford to disregard. Whatever we do in this matter it will be discussed through the length and breadth of the country, in every native kraal from the Kei river to the Zambesi." (C. 3,466, p. 147.)

Two examples I can give from my own experience; for in 1881-2 messages came to my father from the Amampondo, to the south of Natal, to ask his help in representing their difficulties with the Cape Government. This was simply because he was known to have spoken for the Zulus, to have appreciated their position, and at a time when there seemed little chance of his obtaining for them attention, much less redress. Again, in 1882, an embassy reached Natal from Umzila, chief of Gazaland, a territory with six hundred miles of coast line, and running along the Zambesi for some two hundred miles. The party had taken many months on the road, and carried several heavy ivory tusks. Two of these were brought to my father to thank him for speaking for the Zulus in their trouble, and to ask him to be Umzila's friend too. He was not in trouble at present, he said, but he knew that his time for trouble with the white people would come some day, and he hoped that Sobantu (my father) would speak for him then. My father sent him the value of the tusks in shawls, and some two years later another tusk was brought to my mother and to me, to ask us to continue to Umzila's son the friendship which my father had promised to his.

Elephants' tusks as pledges of friendship were also accepted from these people by the English Government in Natal. Yet the Anglo-Portuguese Convention, just published, forbids our interfering between them and Portugal, and the Zulu story for them will only confirm their own experience, "Put not your trust in the English."

And what, then, do we claim for the Zulus now? To hang the wretched Zibebu as a murderer would hardly improve matters. But it is at least equally monstrous that he should be in receipt of a good-conduct pension, and that the accessaries to his crimes should still hold Her Majesty's commission.

The imprisonment of some, and especially the banishment to St. Helena of the three leading chiefs, are the outward and visible sign to the people of their own general disgrace. But merely to release these victims under the present *regime* would be of no avail, especially in the face of the official threat already uttered, that in this event their "prompt and severe punishment" would be bound sooner or later to follow. Though not acquainted with the fable of the wolf and the lamb, the chiefs once expressed the same idea in saying to me during the trials, "If we are ever acquitted you must stay in Zululand to keep an eye on us, or Mr. Osborn (the chief magistrate) will have us back in gaol here in a week or two"—the idea that my presence or advice might in any way avert the muddying of the water, however ludicrous, hardly indicating an intention to offend.

Wholesale removal of the present officials is not urged. The late Governor has been removed—promoted to Ceylon. The special court is dissolved, and its members hold no appointments in Zululand. The removal is claimed of certain men only, on two grounds:—

1. That a change of policy is necessary for the safe government of the Zulus, and to restore confidence in England's intentions among surrounding native races; and that no change of

policy is possible without the removal of those responsible for the old policy, and most prominently identified with it.

2. That the removal is claimed of such officials only as shall be proved before any disinterested tribunal to have been personally guilty of deliberate maladministration, of acts of bad faith and cruelty, and unlawful violence, unfitting them to hold responsible positions in any of Her Majesty's dominions.

The Secretary of the Aborigines' Protection Society, in a letter to the Secretary of State, dated March 28th, 1890, and appearing in the last Blue Book, urges that such inquiry "is scarcely less necessary in order to afford to the present administrators an opportunity of clearing themselves from the discredit now attaching to them than as a means towards advancing the prosperity of Zululand."

In the reply it is suggested that the impeached officials would court such inquiry, but are content to waive their right, lest if held in Zululand it should disturb the native mind!

The anxiety is superfluous, as ample materials for opening an inquiry exist at present in England, in the Imperial Blue Books and the Notes of Evidence (over 1,000 printed pages), taken during the late trials by the president of the special court, who has himself brought his papers to England.

I claim the help of all of you to obtain redress for chiefs and people for the sake of all concerned; and I have spoken to little purpose if you do not feel that we are all of us concerned. This is a scientific society, but it is also an English society, and our rights as English subjects carry each of them a duty; while neither of our great political parties can cast the first stone in this Zulu matter, in which both have been guilty as our agents. I ask your help as English men and women for our fellow-subjects in Zululand.

Longmans' School Geography for North America. — By George G. Chisholm, M.A., B.Sc., and C. H. Leete, B.A. New York, 1890.—Mr. Chisholm says, in his preface to the English edition of his book, that "while he has sought to exclude from the text-book almost all details which the pupils cannot be expected to keep permanently in mind, and can hardly attempt to keep in mind without doing injury in some way to their mental training, he has kept constantly before him the necessity for taking care that what the text-book does contain should be really foundational—should consist of what is most effective as discipline, most important to know." This excellent plan commended itself to Mr. Leete, who wrote for the present edition the portions on America in general, North America, and the United States. The work has been well done. Accuracy of statement has been kept in view, facts are presented with conciseness and in interesting language, and no important subject has been overlooked. The illustrations are well selected, but the printing is not always up to the mark. As it stands, the work is without a rival among School Geographies in America. The authors have purposely omitted maps, and for these the pupil is sent to his atlas.—*Bulletin of the American Geographical Society, September, 1890.*

NOTE ON MANCHESTER RAINFALL DURING THE TWELVE YEARS 1878 TO 1889.

BY REV. L. C. CASARTELLI, M.A., Ph.D.

[Read to the Members at the Memorial Hall, Wednesday, December 3rd, 1890.]

MY original intention in preparing this note was simply to give a general table of the results of the rainfall observations at St. Bede's College during the decade 1878-87. Since then, partly owing to delay in drawing up the tables, I resolved to extend the scope of my returns to the end of last year, 1889. It also occurred to me that, in order to get a general view of the condition of the rain supply in and around Manchester, it would be desirable to compare our own returns with those of other observers. The means of doing so was afforded by consulting the annual volumes of "British Rainfall," edited by Mr. G. J. Symons, F.R.S., and containing annual returns from various local observers.

I have accordingly compiled a general table, containing the total annual readings registered at some nineteen different places in our district and taken from Mr. Symons's work.

It will be noticed that some of these records are complete, extending over the full twelve years, 1878-89. Others are only partial, extending over lesser periods ranging from eleven years to one year. However, I have thought it best to include all.

Few kinds of scientific observations are more liable to local disturbance and individual errors than those of rainfall. The greater the number of different observations, therefore, that can be secured over a given area, the better chance of eliminating the effect of personal and local error. Moreover, we can thus draw conclusions as to general conditions of rainfall in the district as a whole.

A few words of explanation as to the table.

The period 1878-89 has been selected by me because we began our observations here with 1878.

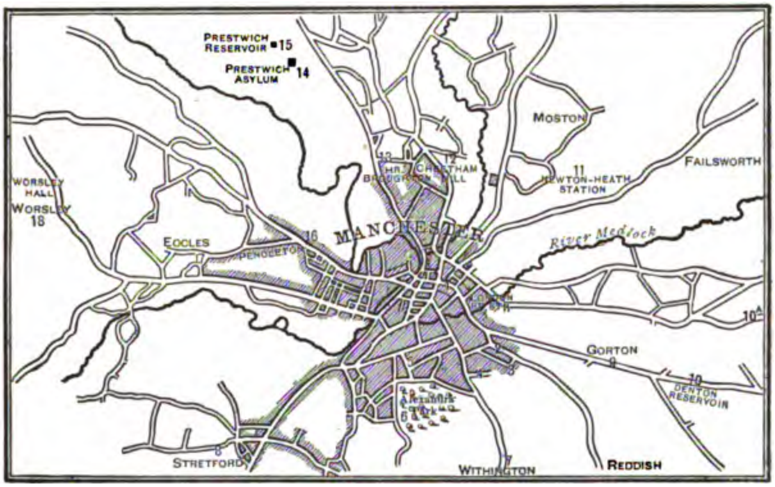
At the foot of the column for each year I have given the average of all the readings at the different stations as reported for that particular year. At the end I have taken a general average of all these annual averages. With regard to the total average for each locality, I have been in some difficulty; for, as remarked above, only some of the observations cover the entire period of twelve years. From these, therefore only, I have been able to get a twelve years' complete average, as indicated in average column A.

ANNUAL TOTAL RAINFALL.

No. on Map.	Stations.	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	Average Fall.			
														Twelve Years, 1878–89.		Decades.*	
														A Complete 12 years.	B Partial.	C 1860–9	1870–9
1	Piccadilly	34·35	34·22	36·93	40·96	46·20	39·03	30·43	30·37	34·56	18·75	26·58	25·90	33·19	..	36·78	34·72
2	Ardwick	33·58	32·89	36·51	39·49	43·53	36·85	28·48	31·61	39·61	21·26	28·40	..	..	33·84	..	..
3	Plymouth Grove	34·77	33·35	36·00	37·41	42·70	36·44	29·11	31·79	39·36	21·71	30·86	30·58	33·07	..	..	..
4	York Place	..	..	..	..	..	..	..	..	..	20·69	29·32	..	..	..	..	..
5	Embden Street	..	..	..	..	..	..	..	32·05	42·39	22·86	34·63	32·93	..	..	..	..
6	Alexandra Park	33·90	36·51	39·68	39·68	38·45	34·66	30·70	29·31	38·14	18·40	25·01	25·92	31·58	..	..	..
7	Withington..........	31·78	31·15	34·65	34·61	41·70	33·41	27·11	30·45	36·14	20·64	27·00	29·56	31·51	..	..	..
8	Stretford	..	..	..	..	40·88	33·95	24·81	30·04	37·08	19·62	27·12	28·13	..	30·28	..	..
9	Gorton	33·64	30·66	35·39	34·02	40·56	35·55	27·06	27·79	35·72	18·43	28·87	28·81	31·45	..	33·71	34·14
10	Denton Reservoir....	32·64	31·55	36·82	36·44	48·43	35·74	27·14	28·01	36·41	18·57	29·71	29·86	31·86	..	32·97	33·78
10*a*	Fairfield	33·59	31·23	36·80	38·11	46·77	37·91	30·43	..	43·76	23·78	36·04	32·90	..	38·57	40·90	37·60
11	Newton Heath	..	35·93	39·34	41·00	51·22	39·66	31·76	34·89	42·40	22·58	32·17	..	..	37·15	..	..
12	Cheetham Hill	..	..	..	..	..	..	..	..	39·42	22·21	31·18	30·16	..	..	..	..
13	Higher Broughton ..	..	..	..	..	..	..	..	..	..	24·18	31·87	34·80	..	..	..	..
14	Prestwich Asylum ..	36·18	35·27	..	38·22	49·62	38·61	32·22	30·78	42·05	23·04	33·95	34·72	..	36·52	..	..
15	Prestwich Reservoir..	35·36	34·32	37·95	40·99	40·81	37·88	31·10	36·41	38·69	21·58	31·88	30·96	35·20	..	..	..
16	Pendleton	..	..	..	..	46·79	..	..	..	..	..	..	..	..	..	..	..
17	Eccles	..	..	37·67	41·00	53·16	40·61	..	..	..	..	..	..	..	..	..	..
18	Worsley Hall	..	..	..	..	..	37·41	26·40	31·70	35·57	19·66	28·55	27·58	..	..	..	..
	Yearly average of all stations......	33·97	33·37	36·16	37·84	45·00	37·40	28·99	31·55	38·40	21·16	30·21	30·16	33·70 General Average.			

* From Symons.

For such of the remainder as cover an important period out of the twelve years I have made up averages, according to their number of years, in column B. For some observations, however, I have not thought it worth while making up an average. This is particularly the case with any record that does not embrace both the years 1882 and 1887, for a reason to be indicated later on.



Sketch-Map to illustrate "Note on Manchester Rainfall, 1878-89.' The numbers 1 to 18 indicate the observers' stations referred to in the General Table. (See pp. 178 and 182.)

In order not to encumber the table, I have not given in it the names of the observers or authorities, nor the height of the place of observation above sea-level, as printed in Mr. Symons's returns. To remedy this omission I give these details below:—

No.	Station.	Observers.	Height of Place above Sea-level. Feet.
1.	Piccadilly	M. S. and L. Ry. Co.	194
2.	Ardwick	Mr. J. Casartelli	140
3.	Plymouth Grove	Alderman J. F. Roberts	150
4.	York Place	Mr. E. Worthington	125
5.	Embden Street	Mr. J. Hart	112
6.	Alexandra Park	St. Bede's College	94*
7.	Withington	Mr. J. King, jun.	110
8.	Stretford	Mr. H. Royle, C.E.	86
9.	Gorton	Mr. J. F. Bateman, F.R.S.	263
10.	Denton Reservoir	Mr. J. F. Bateman, F.R.S., and Mr. G. H. Hill, C.E. (1889)	324
10.*a*	Fairfield	M. S. and L. Ry. Co.	312
11.	Newton Heath	Mr. J. Warren	242
12.	Cheetham Hill	Mr. W. B. Worthington	255
13.	Higher Broughton	Mr. W. Wilson	200
14.	Prestwich Asylum	The Meteorological Council	295
15.	Prestwich Reservoir	(Same as 10)	347
16.	Pendleton	Miss Withington	180
17.	Eccles	Mr. W. G. Birchley	100
18.	Worsley Hall	Mr. W. B. Upjohn	80

*From 1880 to 1888, 176 (on top of building).

We may now deduce a few general results from a study of the table:—

1. Special importance attaches during the twelve years' period to the two years 1882 and 1887. The former was the *wettest* year of the period (having on the whole 11·39 inches *above* the average of the period); and the latter (our splendid Jubilee and Exhibition year) being by far the *driest*, with 12·54 inches average *below* the average of the period. Indeed, I suppose the year 1887 showed the lowest amount of rainfall for at least half a century, and possibly a much longer period. These facts will explain why, in average column B, I have not thought it desirable to calculate for any station whose returns do not cover *both* the extreme years 1882 and 1887.

2. We can arrange the years according as their rain-crop rises above or below the general average of the period (33·70 in.) as follows:—

	Over the Average.		Below the Average.
1882	45·09	1879	33·37
1886	38·46	1885	31·55
1881	37·84	1888	30·21
1883	37·40	1889	30·16
1880	36·16	1884	28·99
1878	33·97	1887	21·16

The twelve years are thus equally divided. The two years following the peculiarly dry year 1887 have both been considerably below the average—indeed, but for the low readings of 1884, these last three years would stand together at the bottom of the scale.

3. A decided *local* grouping will also be observed.

(*a*) On the whole, it will be seen that the stations 1, 2, 3 (Piccadilly, Ardwick, Plymouth Grove), show a remarkable similarity in both yearly readings and averages, and form one local group.

(*b*) Another such group is formed by Alexandra Park, Withington, and Stretford, with a generally lower average, by two or three inches, than the preceding.

(*c*) Gorton and Denton averages agree not only with each other, as might be expected, but also to a remarkable extent with the preceding group.

Fairfield, though so near, stands strangely apart in having a much higher fall.*

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*I may here say I had not originally intended to include Fairfield in my purview.—I even had not provided for it in the map-list, so that I have to number it 10*a*. I also regret very much to have lost my notes giving the Fairfield total for 1885, as recorded in Symons. The record is really complete, but I have not at hand the means of consulting it.—L. C. C.

4. A still wider conclusion, based on the above, can be drawn by glancing at the map. If we take the line formed by the river Medlock on the east side of Manchester and by the river Irwell on the west side of it, we shall have a line which divides the area of the map into two regions, one to the north and one to the south. Now it will not fail to be noticed that of these two regions the rainfall in the southern one, embracing the stations numbered 1 to 10*a* inclusive, is—again with the solitary and striking exception of Fairfield—generally *lower* than the rainfall in the northern half, containing the stations numbered 11 to 18. In the latter region, however, Worsley Hall seems an exception, the readings there being more like those of the southern half, and often very close to the general average (*re* 1883, 1885).

5. It is, of course, necessary to take the readings of rain in connection with the height of the land. It will be seen, by comparing the results just given with the preceding table of heights above sea-level, that, taking stations 1 to 8 in the southern districts, their height above sea-level ranges from 86 to 194 feet, with an average of 132 feet. Gorton, Denton, and Fairfield, in this area, stand much higher—263, 324, and 312 feet respectively. Similarly in the northern section, stations 11 to 16 range between 180 to 347 feet above sea-level, with an average of 253 feet, nearly double of the groups 1—8. And in this same region Worsley, which forms an exception by reason of its smaller rainfall, also forms a still more striking exception by reason of its lowness of elevation, only 80 feet above sea-level or lower than any station even in the southern part. Thus, on the whole, there is seen to be a tendency to more rainfall on the higher ground, and *vice versa*.

6. The most general conclusion that we can draw from the returns of these twelve years is that our average rainfall for the whole period and the whole area is 33·70 inches, or a little less than thirty-three inches and three-quarters. Such is the average water-crop of "Rainy Manchester." *

I have to thank the "Victorians" for the maps prepared by them to illustrate these remarks. The following table will explain the small map herewith, the number of the stations only

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* For the sake of comparison, I give a few averages for the twenty years' period 1860-79, compiled from Symons. Unfortunately he has not yet published those for the period 1880-89, so the two periods do not coincide. The comparison has therefore less value. Of course I omit the Lake Districts, where the rainfall is, for England, phenomenal:—

	Inches.		Inches.
Arncliffe, Yorkshire	60·51	Tavistock, Devon............	47·94
Bolton (Belmont)	58·26	Heywood.....................	44·40
Halifax	49·03	Whaley, Cheshire	43·63
Stonyhurst	48·65	Chapel-en-le-Frith	42·25
Bolton (The Folds)	48·05		

being shown for want of room. The *upper* figure at each station indicates the *average* rainfall during the period of observation; the *lower* figure indicates the number of years over which the average has been taken; the number in *brackets* the *height* of the station above sea-level. Thus, for Ardwick.

$$\frac{33\cdot84}{11}\ (140)$$

indicates an average fall of 33·84 inches, made up from eleven years' observations, the station being 140 feet above sea-level,

1. $\frac{33\cdot19}{12}$ (194)
2. $\frac{33\cdot84}{11}$ (140)
3. $\frac{33\cdot67}{12}$ (150)
4. ? (125)
5. ? (112)
6. $\frac{31\cdot53}{12}$ (94, 176)
7. $\frac{31\cdot51}{12}$ (110)
8. $\frac{30\cdot28}{8}$ (86)
9. $\frac{31\cdot45}{12}$ (263)
10. $\frac{31\cdot36}{12}$ (324)

10a. $\frac{35\cdot57}{11}$ (312)

11. $\frac{37\cdot15}{10}$ (242)
12. ? (255)
13. ? (200)
14. $\frac{36\cdot52}{11}$ (295)
15. $\frac{35\cdot20}{12}$ (347)
16. ? (180)

17 ? (100)

18. ? (80)

QUEENSLAND METEOROLOGICAL OBSERVATORY.

A SHORT NOTE ON THE WORK OF MR. CLEMENT WRAGGE.

[Read to the Members, Wednesday, December 3rd, 1890.]

MR. CLEMENT WRAGGE, a brilliant young scientist, who for some time was an assistant at the Ben Nevis Observatory, has been entrusted by the Queensland Government with the work of instituting and perfecting meteorological stations for that colony.

He has laid down very able directions and rules for the observers, and has succeeded in obtaining a sufficient number of stations in the colony and in other parts of Australia as will enable him to give the daily climatic changes of Australia.

It is a remarkable thing that from Brisbane we should receive the daily report of the weather from all parts of that continent.

Mr. Wragge has sent us the Act constituting his department, the instructions to the observers, a list of the stations of observation, and daily sheets of the weather for several months. The whole matter is creditable to the Queensland Government and to Mr. Wragge.

The practical use for commerce is that warnings of coming changes can be given, as the telegraphic announcement of waves of changes are transmitted to all the ports.

To agriculture the result, when a number of observations extending over a sufficient length of time enables the observer to gather up the knowledge, will be of great service; and to science generally, when the Australian results are connected with the splendid work of the American signal service and our own meteorological department, they will be of incalculable value.

In this short note I wish to draw the attention of the meteorologists of the society to the work being done, and when the whole of the year's daily sheets are to hand another opportunity will be taken to estimate the results of the observations.

Captain Van Gele's Exploration on the Mobangi River.—Captain Van Gele has been out of sight and hearing for over a year, exploring the Mobangi, the great northern tributary of the Congo, and its affluents. A detailed report of his discoveries has at last reached the *Mouvement Géographique.* On the present expedition he was well supplied with instruments, and he discovered that the great bend of the river above the Zongo rapids should be shifted about half a degree further to the north than its position on his first map. He found several new stations, and throughout these months of work the health of the explorer and his party was excellent. The Yakoma natives, who received him with hostile demonstrations during his first visit and finally prevented his further advance, assumed a more friendly attitude during his last journey, and finally Van Gele won their confidence and assistance. He explored for a considerable distance some of the important affluents of the right bank, of which the Koangu and Kotto are the largest. He is still exploring the river and its upper branches.—*Goldthwaite's Geographical Magazine, April, 1891.*

Dr. Peters' Travels in East Africa.—Dr. Peters has returned to Europe after performing a very remarkable expedition in East Africa. His name and his deeds have of late been so much before the public that it is unnecessary to describe his experiences in any detail. He who was given up as lost, and was universally lamented in obituary notices, has now returned home, as vigorous as ever, and quite prepared to continue his career as a pioneer of German colonisation in Africa. A few general particulars may be given. He left Witu last July, and proceeded up the river Tana to the neighbeurhood of Kenia. Lake Baringo was reached on January 7th, 1890, and Kavirondo at the end of the month. By the early part of February he was only six days' march from Emin Pasha's first station, where he learnt from the Waganda that the Pasha, to whose relief he had ostensibly set out, had departed in the train of Mr. Stanley. Nevertheless, Dr. Peters continued his journey westwards until the native information he had received in regard to Emin Pasha was confirmed by a letter from Mr. Stanley, which he intercepted and opened. He proceeded to Uganda, where he remained a short time, and eventually to Ugogo and M'pwapwa. On his arrival at M'pwapwa on 19th June he met Emin Pasha. On the 16th July he reached Bagamoyo. Owing to the smallness of his caravan and the hostility of the natives Dr. Peters had to fight his way step by step for the greater part of his journey. His privations and dangers were extreme; but he survived them all. It will be a disappointment to him, no doubt, that, in consequence of the recent Anglo-German agreement, the bundle of treaties he brought back will now be valueless.—*Scottish Geographical Magazine, September, 1890.*

SIR WILLIAM MACGREGOR'S ASCENT OF MOUNT VICTORIA, AND EXPLORATIONS OF THE OWEN STANLEY RANGE, BRITISH NEW GUINEA.

By J. P. THOMSON, F.R.S.G.S., &c., Hon. Secretary and Treasurer of the R.G.S.A., Brisbane.

[Read to the Members in the Library, Tuesday, March 18, 1890.]

THE chief object of this paper is to supply geographical science, through the medium of our society,* with information concerning the physical features and other geographical conditions of the hitherto entirely unknown and imperfectly known sections of the far-famed Owen Stanley Range, situated in the middle of a torrid region—the youngest of the offspring of a loving, gracious, and munificent mother, zealously and faithfully nursed by our distinguished member, to whom the guardianship has been entrusted; also to show intending explorers the numerous obstacles to be met with in these and similar regions, and the resolution, courage, and skill necessary to surmount them.

The successful ascent of a range of mountains slightly exceeding 13,000 feet would, in the category of ordinary exploratory feats, not arouse in us so much interest, but when we look back upon our past experiences in British New Guinea, as regards results and pecuniary measures, we may perhaps be pardoned for an apparent exuberance of geographic enthusiasm.

For the many data necessary in the preparation of this paper and its illustrations, I am, it is almost needless to state, indebted to Sir William MacGregor, to whom I accord my humble thanks.

The expedition which left Port Moresby on April 20, 1889, proceeded in a boat to Galley Reach, about thirty miles to the west, where the Vanapa river was entered by one of its deboucheries opening into the eastern side of Galley Reach, not previously noticed nor shown on the charts. From its mouth to the highest limits of tidal influence the banks of the river are covered by dense mangroves, but above that limit the banks are from 10 to 12 feet high, composed of deep rich soil studded with ilimo and other large trees. Owing to the presence of numerous snags, the existence of strong rapids, the discolouration of the water by heavy interior rains, and the tortuous sinuosities of the river, its navigation was slow and tedious, and an application of the best efforts resulted in its ascent to a place only about forty miles by water from its mouth, which was reached on the 27th of the same month, where the principal depôt was formed, the latitude of which was found to be 9° 7′ S.

From about fourteen miles from its mouth the banks of the river are formed by steep forest-clad hills, into whose clayey and slaty formation the careering of its deposit-laden waters has cut its deep eroded furrows, indicating the passage of ages by its grim wrinkles and deep fissures.

No natives were seen near the banks of the river from its mouth to the depôt by the first section of the expedition, but their traces were indicated by the existence of a cleverly-constructed suspension bridge across the Vanapa river, at a place where it is narrowed by the encroachment of a rocky escarpment of the hills, the end of which produces a large tree of the banyan variety, the trunk of which supports an end of the bridge 50 feet above the surface of the river. From this point the bridge, which is seventy yards long and composed of rattan cane, stretches to the opposite side of the river, where it is attached to a somewhat small tree supported by a stout post, both of which are again stayed by rattans to trees further back. This structure was carefully and minutely examined, and revealed to a very considerable degree the constructive faculties of a primitive race of people.

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* The Royal Geographical Society of Australia.

After the depôt had been established, some of the party were sent back to Port Moresby for reinforcements, while Sir William in the interim was fully engaged upon a preliminary examination of the neighbourhood, the sketching out of a line of march towards the high lands of the interior, and the procuring of such data as might assist the future movements of the expedition. The course of the Vanapa was also traced for several miles above the camp, and, although assisted by only one man, a track was cut through the scrub and jungle, for a distance of seven miles in the interior, along the line of march. His Honour's movements were much impeded by the ill-health of his few followers, and the afternoon torrents of rain which spread from the thunder-storms of the interior. The forenoons were sultry, and the vegetation soaking wet in the morning. Although traces were everywhere observed, no natives were seen. This district possesses a dense forest, many of the timber trees of which are valuable. Included in these are the cedar and ilimo ; the latter is supposed to be white ant proof. Cultivation is rendered impracticable through the narrowness of the gorges and the steepness of the hills, the latter being composed of slate, with numerous thin veins of white quartz. This may be accepted as the general geological condition of the district. In some of the creek beds large isolated boulders of conglomerate and smaller ones of basalt were observed, but no traces of gold or other valuable metals were found.

While exploring the district about two and a half miles from the depôt, a prominent rock, which was named Jack's Rock, was discovered on Mount Gleeson. This rock, whence a clear unobstructed view of the high lands of the interior, even to the summit of the Owen Stanley Range, may be obtained, is situated at an altitude of about 1,000 feet above the sea-level, and its point of vantage is strongly recommended to future observers.

On the 17th May, reinforcements having arrived on the previous day, the expedition, which then numbered forty-two persons all told, composed of four Europeans, eorge Belford, a Samoan half-caste, five Polynesians, and thirty-two Papuans, started for the interior. The highest point of the long spur of Mount Gleeson was traversed at an altitude of 1,292 feet. Another ridge of about 800 feet high was crossed, and the evening camp made at the confluence of the Exton Creek and the Vanapa river, at an altitude of about 300 feet. From Exton Junction the expedition crossed over two miles of broken country, composed of very steep and precipitous ridges, the altitude of which did not, however, exceed 700 or 800 feet. Several creeks were also crossed and their beds examined, but, although the formation was slate and quartz, with favourable indications of gold, none was found on washing the gravel.

Taula Creek was reached at an altitude of 583 feet, and the steep western end of Guba Hill ascended and crossed at an altitude of 1,000 feet. The geological conditions of this district are of a quartz and slaty nature, the hills rugged and precipitous, and the timber of no great proportions. Although many of their traces were observed upon the trees along the ridges, yet no natives were, at this stage of the journey, seen. Cæsar Hill was traversed, and the Atoa Creek—a fine clear stream of twenty yards breadth, with a slaty and basaltic border bed—crossed at the 500 feet level. The steep rough spurs and ridges of Mount Kowald were next ascended, its summit crossed at an altitude of 2,750 feet, and its northern side descended to the right bank of the Vanapa river, the current of which at this point runs very rapidly over a rough rocky bed. Although straight and in great abundance, the timber trees on Mount Kowald are not of large proportions. The crossing of the Vanapa river, which was accomplished by means of a raft constructed by Mr. Belford, who gallantly and voluntarily swam the muddy seething torrent, was a tedious and difficult task, owing to the partially flooded condition of the river and its irregular and obstructed channel. The expedition continued its journey for a short distance along the left bank of the Vanapa, until impeded by the intrusion on its banks of the huge rocky escarpments of mountains, which narrow the river's course and render the traverse of its bed impracticable; consequently the spurs of Mount Belford were ascended, and the march continued along the crest of its summit at a height of 3,500 feet, thence down the precipitous and rough northern side of the mountain to the Joseph river, which, winding along the southern base of Mount Musgrave, at this point passes the 2,635 feet level.

The formation of Mount Belford is of the usual slaty and quartz nature, covered with forest of fine timber trees, and, like Mount Kowald, more frequented by birds than any other section of the country through which the expedition passed. From the existence of their paths and camp sites, the mountain region appears to be largely patronised by native hunters, although they neither plant nor reside on it. Tall and graceful wild bananas, a pepper somewhat similar to the *Piper methysticum*, only in this case growing as a tree from 20 to 30 feet high, a very fine rhododendron, and several other rare and valuable botanical specimens, were observed on Mount Belford. The natural history department was also strongly represented by that silent and pestiferous insect the scrub tick.

Following a native hunting-path up a spur from the Joseph river, the expedition ascended the slopes of Mount Musgrave, to the crown of one of its main ridges, at an altitude of 5,000 feet. Here was found a large hunting house, to which was given the name of Goodwin Lodge. This house, which was about 25 feet long, 10 feet wide, and 6 feet high, having a roof covered with the leaves of a dwarfish pandanus tree, presented the appearance of recent occupation, and, although one of their dogs was running about, no natives were seen, nor responses heard to vigorous inviting shouts. The ground around the house was wet and swarming with leeches, and the atmosphere alive with mosquitoes, so that a prolonged halt at Goodwin Lodge was considered undesirable. Following the crest of the ridge in a westerly and northerly direction from Goodwin Lodge, the expedition reached the main crown of Mount Musgrave, at a height of 5,588 feet above sea-level, where it camped. Taking advantage of a short halt made here for the purpose of forwarding the rear baggage, the native path was followed to the western end of the crest of the mountain, whence angles were taken to and good views obtained of the Owen Stanley Range, and the general conformation of its southern aspect. From this point a large native village was seen on one of the ridges at the foot of the south-west spur of Mount Knutsford. The many noises peculiar to native festivity were heard during the first night on the mountain, proceeding from a locality apparently situated some miles to the north-west, and the next day they honoured the camp by a visit. Friendly relations having without difficulty been established, the expedition was visited by numbers of these mountain people during its stay in the locality, and the relations throughout were of the most friendly character, a circumstance which rendered the operations of the expedition agreeable, and the services of the natives of great value in the supply of food. Their language bears strong relations to the Papuan dialect, and they are physically stronger than the coast men, perhaps a little shorter, having long, strong bodies, but generally shorter and more muscular legs. They wear neither nose nor ear ornaments, nor do they tattoo. The older men wear caps made of the best of cuscus fur, with frontal ornaments made of white shells ground down to thin plates, and sewn together with cheek pieces of black cassowary feathers. Others wear caps that are less picturesque, though more elaborate, trimmed with the tusks of boars and the teeth of dogs. Youths generally affect head-pieces made of native cloth, apparently manufactured from the bark of the mulberry tree, into which they gather their thick mops of hair. On the breast they wear a piece of network, with small meshes about 8 to 10 inches deep, and long enough to extend rather more than half way round the ribs, from where it is fastened behind by strings from its four corners. They all wear the perineal band, as worn at the eastern end of New Guinea, but every man and boy is clothed with an additional girdle of the cloth made from the bark of the mulberry tree, about 10 or 12 inches deep, cut up into lappets, over which they also wear in front as an apron a small net bag about from 9 to 12 inches in length. On the neck, legs, and arms they wear rings of cane, some of which are plain, others plaited or twisted. Their features, which are remarkably good, indicate more character and strength than those of the average coast man, and the cheek bones in many are rather broad and prominent. The nose is generally of the Semitic type, with nostrils either not arched or more so than is usual in Papuans ; the chin and under jaw are also stronger. Although less shy than other tribes, having seen more of white men, and possessing all the volubility of the Papuan race, they are apparently superstitious and nevertheless easily frightened. Although weapons of any kind were never seen in their possession, they stated that the bow and the spear were both used by them. They grow yams, sweet potatoes, several varieties of bananas, good tobacco, and possess abundance of food, which they readily exchanged for salt, beads, and cutlery. Doubtless, owing to its possession, they do not prize tobacco. Small parcels of peas, beans, and tobacco seeds, which they cultivate, were procured from this interesting tribe of natives, who always made a rule to leave the explorers' camp before nightfall. None of their women were seen. After a day had been spent in camp on the main crown of Mount Musgrave, the expedition continued the ascent of its crest, along which it proceeded for a distance of two miles, and again camped at an altitude of 7,180 feet. The temperature here was 70° at noon and 60° at night, and the climate raw and foggy. Everything upon the face of the mountain was saturated with moisture and clothed with moss, which lent to the sombre forest a weird and lonely aspect, and even at this altitude the mosquitoes were troublesome. Next day the traverse of the crest was continued, when, after ascending to a place 8,000 feet above sea-level, and observing no indications of a favourable connecting spur with Mount Victoria, the expedition retraced for a mile to the 7,180 feet level, and commenced the difficult and perilous descent of the northern face of Mount Musgrave to the 6,000 feet level, where further progress was then arrested by a precipitous line of rocks, crossing the path at right angles. The dangerous position of the expedition at this stage was rendered more critical by a dense curtain of mist, which so completely enveloped it as to render an observation of surroundings impossible. Compelled by circumstances, the party camped for the night in this inhospitable and miserable position, subjected to a temperature of 58° Fahrenheit at night, 60° in the morning, and 67° at noon. Next morning the aspect was so uninviting that the Papuan members of the expedition refused to proceed on the journey. However, after the administration of certain medicine, many real and pretended cases of sickness were cured, and a start being made, Sir William succeeded, single-handed, in cutting a track right down the rocks and precipices, which was probably the most precipitous and dangerous ever traversed by carriers—even the natives at first refused to risk the descent, but, after being assured of the safety of their leader, they eventually hazarded the dangers of the path, and, by great perseverance and unflagging exertions, the expedition descended to the edge of a small creek, at an altitude of 4,300 feet above sea-level, weary and greatly discouraged by small progress and inhospitable surroundings. At the 3,380 feet level on Mount Musgrave, a small precipitation occurred at night, and the whole zone was enveloped in fog. At an altitude of 5,588 feet a little rain also fell towards the evening, and the fog envelope commenced to close before noon. The trees of this zone are not of large size, and most of them appeared to belong to the myrtaceous family. There is plenty of fine timber growing below the 6,000 feet level, but above that altitude the trees are smaller and generally very crooked. The summit of the mountain, which was found to be 9,150 feet high, is narrow in places, but not so rocky as a distant view of its general appearance indicated. The geological conditions of the whole mountain, from base to summit, are slate and quartz, with well marked white veins of the latter, between the 6,000 and 7,000 feet levels. Owing to the unsatisfactory physical condition of several members of the expedition, Sir William was obliged to continue the journey from last camp, at the 4,300 feet level on the north side of Mount Musgrave, with only Mr. Belford, two Polynesians, and six Papuans; Mr. Cameron, his honour's acting private secretary, with the remainder of the party, at his own wish, returned to the camp on Mount Musgrave, and awaited Sir William's return.

Continuing the descent across a succession of precipitous cliffs and rugged gorges, bristling in their grim and desolate solitude, the expedition succeeded in reaching the base of the steep rocks at the foot of Mount Musgrave, and the Vanapa river at the base of Mount Knutsford, about noon on the same day. The Vanapa at this place runs west by south, and is not more than half the size of its section at the west end of Mount Belford. As a traverse of its channel, which was thirty to forty yards wide, was altogether impracticable for men carrying packs, and dangerous under whatever circumstances, owing to its obstruction by huge irregular boulder piles, and seeing no easier accessible route over the comparatively short gap of three miles which separated them from Mount Victoria, it was decided to ascend Mount Knutsford, and follow the steep spur connecting it with the Owen Stanley Range. Accordingly the dangerous and difficult task of crossing the Vanapa river was undertaken, and accomplished by means of a temporary bridge constructed by Mr. Belford, at a place where an accident or fall from it into the river would have resulted in certain death. The altitude of the river at this crossing was 2,790 feet above sea-level, and the temperature at mid-day 68° Fahr. From the left bank of the river they commenced the ascent of one of the leading spurs of Mount Knutsford, which was rugged and precipitous, and camped at two native houses used by them as a halting-place, at an altitude of 500 feet above the river crossing. At this point no rain fell, but there existed a partial obscuration by fog from early in the afternoon. Next morning the ascent of the mountain was continued, and after traversing an estimated distance of two miles, the evening camp was made at the 6,500 feet level, where the temperature at 3 p.m. was 72°, and at 6 p.m. 67°. This region was completely enveloped in fog by the middle of the afternoon, but no precipitation occurred; and here, as on the higher zone of Mount Musgrave, the trees were generally not large, and the forest possessed a similar myrtaceous character, and, excepting a few mountain pigeons, which were hard to obtain, no game was seen. The ascent was commenced early next morning, and a distance of one mile traversed by noon, when the temperature was 64° Fahr., and the whole region completely enveloped by a column of dense fog. After a most laborious and difficult ascent of the almost perpendicular face of a precipitous and rugged spur, which, but for the existence of the friendly roots, trunks, and branches of moss-draped trees, would have been inaccessible to packers, a camp was made in the afternoon, on a razor-backed ridge barely wide enough for a path, at an altitude of 8,300 feet, where the last shower of rain met with on the upward journey fell. Excepting the small quantity caught from this shower no water could be obtained at this camp. This region was remarkable for its awful, depressive, death-like stillness, which was doubly intensified by the grim sepulchral appearance of the trees, with their roots, trunks, branches, and, slightly, even their leaves, enshrouded in thick clinging garments of moss, which rendered them dismal to the eye and repulsive to the touch. The surface of the ground and the vegetation were soaking wet, and the dense curtain of vapour, especially when its wavy motion caused it to ascend from the abysmal ravines, or break on the rugged spurs, caused the surroundings to appear more gloomy and awe-inspiring, and the rugged and precipitous spurs and ridges even more terrible and inaccessible than their real condition indicated. Even the birds aided nature in its dismal solitude by withholding their cheerful sounds; the leaves of the forest emphasised the stillness of the region by the absence of their rustle; while the members of the expedition appeared enthralled by the intensity of the solitude, for they seldom conversed, and uttered but whispers. At this camp the number of the party was further reduced by one Polynesian and three Papuans, who were sent back to the camp on Mount Musgrave. Twenty pounds of rice was hidden in a secure place at this camp, and the party, now consisting of his honour, Sir William MacGregor, Mr. Belford, Joe Fiji, and three Papuans, provisioned with fifty pounds of rice, thirty pounds of flour, about six pounds of ham, about the same quantity of salt beef, and armed with two shot guns and one revolver, continued the journey on the morning of the 4th June, without breakfast, and after proceeding three-quarters of a mile up the face of Mount Knutsford, they camped at a native hunting depot, with three cooking places excavated in the ground about 18 inches wide, nearly the same depth, and half filled with small stones. The altitude of this camp was 8,815 feet, and the temperature at noon in the shade 63° Fahr. As the forest trees were larger and straighter and there existed less abundance of moss than in the region between 6,000 and 8,000 feet, and as it was found that the upper margin of the dense afternoon fog that had settled down on the region immediately below reached no higher, it was considered that this camp marked the upper line of the dismal, wet, vaporous, mossy zone.

The next day, at an altitude of 9,000 feet, the expedition entered an undergrowth of bamboos, with stems about an inch in diameter and easy to cut. This continued until the 9,500 feet level was reached, when the character of the bamboo changed entirely. Here the stems grew as close together as wheat, and their tops ran completely over and entirely obscured the heads of the tallest trees, so that the task of cutting a track through them was both tedious and laborious; nor was this condition of bamboo forest changed till the expedition left Mount Knutsford, beyond which there was none. The zones of moss and mist, which are apparently inseparable, end together, and a fine dry climate begins with the bamboo, which is never lost till a descent is made to the 8,000 and 8,500 feet level into fog and moss. At 2 p.m., on the 6th June, the summit of Mount Knutsford was reached, and its height found to be 11,100 feet above sea-level. The climate here was magnificent—a dry and cold atmosphere, possessing a temperature of between 60° and 70° Fahr. during the middle of the day, in the partial shade of the forest, and 40° to 45° Fahr. at night and in the early morning. This position was some 2,000 or 3,000 feet clear above the great masses of snow-white clouds, which completely cut off all view of the lower regions. The top of this mountain culminates in two great accessible masses of rock, each about 100 feet high, separated by a space of about a quarter of a mile, upon the middle of which is situated a smaller and lower mass of rock. The limited area of these rocky peaks was covered with an Alpine flora, which also flourishes in the highest 500 fe zone of the mountain. Specimens of all these were obtained, but, altogether, the limited flora of Mount Knutsford was considered disappointing. From base to summit the geological conditions of this mountain are diorite and crystalline micaceous schist.

The clouds in this region, which were apparently motionless, excepting an occasional projection of small jets of vapour shot upwards through narrow ravines right to the summit of the mountains, were considered to be formed solely by the union of local causes and not brought thither by the south-east winds. The upper surface of this stratum of cloud, which is usually about 4,000 to 5,000 feet thick, is like a field of snow, almost dazzling in its whiteness, and its rugged masses, which are irregular in their serration, extend their hoary flakes so far as to obstruct the vision beyond their limited horizon, while the tops of the higher mountains rear their lofty and majestic heads from 2,000 to 5,000 feet above this Arctic landscape, which causes them to assume the appearance of islands in a silvery sea of glassy smoothness. on the early forenoon, before the obscuration of the lower regions occurred, which was usually about ten o'clock, a clear view could be obtained of the country bounded between the top of Mount Knutsford and the south coast. It was also observed that numerous plantations and plantation houses were located on the north side of Mount Musgrave, and that the only permanent villages and human habitations observed on any section of the Owen Stanley Range were situated on Mounts Knutsford and Griffith. The altitude of the sites of the permanent villages did not exceed from 4,000 to 5,000 feet above the level of the sea. From the top of Mount Knutsford the most extensive and effective view is obtained of the basin and course of the river Vanapa, through which the whole of the south waters of the Owen Stanley Range flow. This river divides at the north-west end of Mount Musgrave into two branches. The one trending west drains the eastern waters of Mount Cameron, the eastern and southern waters of Mount Lilley, and the southern waters of Mounts Thynne and Griffith. The eastern branch gravitates at first between Mounts Knutsford and Musgrave, thence for a short distance separating the former from Mount McIlwraith, till they are divided by a projecting offshoot of Mount Victoria. The river then forms itself into five divisions—the first branch flows between Mounts McIlwraith and Morehead; the second between the latter and Mount Victoria; the third between the latter and the southern slopes of Mount Douglas; the fourth between the latter and Winter Height; and the fifth, which is the principal and true head of the Vanapa river, flows between Mounts Griffith and Knutsford on the south, and that part of the Owen Stanley Range named Winter Height on the north. The lower and middle section of this river is well adapted for the transportation of timber; but, owing to the immense boulders and stones which obstruct the channel, the upper section from the west end of Mount Musgrave is impracticable for navigation. Mounts Service, Morehead, and McIlwraith attain to altitudes of from 10,000 to 11,000 feet, and are situated between Mount Victoria and the Brown river, which is a branch of the Laroki.

On the 8th June the journey was continued in a north-westerly direction, along the summit of Mount Knutsford; and, for the last time on the outward journey, across the Vanapa, at a place 10,130 feet above sea-level, where the river is five yards wide, with a very rocky channel. On crossing the river the ascent of the central spur of the Owen Stanley Range was commenced, and on the afternoon of the 9th Winter Height was reached, at an altitude of 11,882 feet, on the top of the great central ridge of the Owen Stanley Range. Continuing the march on the same day a camp was made on the lowest part of this ridge, between Mount Douglas and Winter Height, where the top of the gorge on the south watershed meets a similar formation on the north watershed, at an altitude of 10,884 feet above the sea. The forest here was mainly composed of cypress, and the only sound to break its silence was the howling of the wild dogs. Next day the march was continued, the top of Mount Douglas passed over, at a height of 11,796 feet, where strawberries were found, excellent in flavour, but not of large size; and after travelling a distance of five or six miles, camp was pitched at a point on the main Owen Stanley Range, some few hours' mareh from its highest crest, which was reached at 11 a.m. on June 11. This culminative crown, which was named Mount Victoria in honour of Her Majesty the Queen, possesses no trees within 1,500 feet of the top, and but few bushes within 1,000 feet thereof. It, however, possesses a great variety of grasses, daises, buttercups, forget-me-nots, heaths, &c. Of the birds, which were very few and uninteresting, three specimens were obtained, including a lark. Two nights were spent at a point on Mount Victoria, 12,452 feet above the sea, and 670 feet below the summit of its highest peaks. The temperature here was, during the day, from 10 a.m. till 4 p.m., between 50° and 60° Fahr. in the shade; and on the tops of the highest peaks where exposed to the direct solar action, the temperature in the middle of the day was 70° Fahr.; and in the early morning, before reached by the rays of the sun, the surface of the ground was white with frost, and icicles more than an inch in diameter and 7 or 8 inches long were brought into camp. Excepting a slight haze at times, when a strong south-east wind was blowing, the sky in the daytime was blue and cloudless, and at night the mighty galaxy of stars shone with great brilliancy in the clear heavenly vault. The existing conditions of Mount Victoria and of all the most prominent features of the Owen Stanley Range indicated a dry region, and the impressive silence of the surroundings was not broken by even the trickling of rivulets nor the more mighty weird moaning sounds of the romantic waterfall and cataract. A series of six separate serratures or peaks projecting from a common base, the plane of which is one and a quarter mile long, extending from south-east to north-west with a slight curvature, the convexity of which lies to the north of a straight line joining the extremities, constitutes the crest of Mount Victoria. The extreme north-west and the south-east of these peaks, which are of equal height, and comparatively easy of ascent by great rifts in their rocky sides, are a few feet higher than those of intermediate position, which, being formed of nearly perpendicular and overhanging bare rough-surfaced rocky masses, especially the upper hundred feet of their sections, are exceedingly difficult of ascent. These peaks are separated from one another by chasms many feet deep, laborious to traverse; and their tops, which are composed of decomposed rocks, bedecked with beautiful flowering moss and heath, are from eight to ten yards broad, and from fifty to sixty yards long.

The eastern end of the Owen Stanley Range is not the culminative axis of an isolated pyramidal block, as described by previous observers from afar, nor yet does it possess a crowning eminence, the conformation of which in ordinary geographic or geometric phraseology could, with the smallest pretence to correct application of appropriate designation, be named a pyramidal block or pinnacle, although it is just possible that the conformation of a mountain crest, composed of many peaks, may be such as to make it appear one solid mass, when viewed from certain positions, and may actually be accepted and described as such by those of inexperience.

Mount Victoria is formed by the convergence and union of five huge rocky precipitous buttresses exceeding 12,000 feet in height, two of which are on the northern side, two on the southern side, and a giant one on the south-east side, all of which are bristling with grim peaks and inaccessible crags and precipices. The Owen Stanley Range continues unbroken from Mount Lilley in the north west for a distance of about thirty miles to Mount Victoria in the south-east, which is separated by a number of low rounded hills from the rugged mountainous country to the north-west of and in the neighbourhood of, Mount Obree. It will, therefore, be observed that to speak of Mount Obree as part of the Owen Stanley Range is just as incorrect and misleading as it is to speak of the pyramidal block or highest pinnacle of Mount Owen Stanley.

The views from the peaks of Mount Victoria, which were of the most romantic character, and the bold and clear panoramic and scenic outlines of the great physical conformation of the south-east section of New Guinea, from the southern to the northern coast, were of the greatest possible interest, and would have more than satisfied the utmost limits of the wildest imagination. Here the natural curvature and irregularities of the Owen Stanley Range were observed from the point of union with Mount Griffith on the south, and the bold, bare, rocky, treeless, serrated-topped Mount Scratchley on the north, to Mount Lilley on its extreme north-westerly termination.

Mount Scratchley, which is estimated at a height of 12,250 feet, and is, in consequence, the third mountain in the Possession, presents a bold rugged outline, with the upper 500 feet of its section composed of bare rocky masses, with a general trend in a north-east direction for three or four miles, where it is formed into two great offshoots which terminate opposite Mounts Gillies and Parkes. North from Mount Scratchley, and having a general trend in a similar direction, lies Mount Albert Edward, the second mountain in the Possession. This mountain, the height of which is estimated at 12,550 feet, possesses a partly bare and partly grass-covered rocky crown, with the upper 1,000 feet of its section destitute of timber, but only four or five miles of its crown were visible from Mount Victoria. Between Mount Victoria and the northern coast, which was plainly visible for several hours in the forenoon, only two great mountain masses are observed within the first quadrant of the circle. These mighty mountains, which are apparently separated from one another and from the Owen Stanley Range, were named Mounts Gillies and Parkes. They are from 7,000 to 8,000 feet in height, and the most western, Mount Gillies, presents a regularly shaped profile of from 15 to 20 miles long in a north-easterly direction, densely covered with an unbroken forest mantle, and separated from Mounts Scratchley and Albert Edward by a valley of a mile or two in width, and from Mount Parkes, east of it, by a river. Mount Parkes, which obtains a length of from 25 to 30 miles, assumes a longitudinal position similar to the direction of the Owen Stanley Range. In general physical appearance it resembles Mount Gillies, has no sharp, well-defined peaks, and is covered with forest. Between Mount Parkes on the north, and the ends of Mounts Scratchley and Douglas on the south, a valley two or three miles long widens out and disconnects the former from the end of the Mount Obree Range. This valley, which maintains an average breadth of four or five miles and a length of thirty miles, appeared to be thickly populated.

Although impossible to indicate the direction in which they ran, rivers could nevertheless be seen between the end of the Mount Obree Range and Mount Parkes, and between the latter and Mount Gillies, while far away easterly and southerly could be seen the bold outlines of other mountain ranges.

Viewed from the lofty summit of Mount Victoria, the general conformation of the territory on the northern side of the range appeared uniform and comparatively flat, and the population greater than on the southern watershed.

In so far as we have been able to prove, the geological structure of Mount Victoria is of the simplest kind indeed. From the top of the Owen Stanley Range to the mouth of the Vanapa no great varieties of order occur, so that, geologically speaking, the floor of the Vanapa basin differs little from its higher to its lower level Specimen rocks brought back indicated the existence of crystalline micaceous schist on Mount Victoria, diorite on Mounts Griffith and Knutsford, and the occurrence of traces of gold in the bed of the upper Vanapa, while in its other sections micaceous schists, hornblende, porphyry, and altered sandstone exist; but, as it is not yet known how much of these rocks are representatives of the districts in which they are found, it is, in consequence, merely an assumptive conclusion as to the actual geological conditions of that part of the country. Yellow sands containing gold also occur in the lower section of the Vanapa basin.

From the top of Mount Victoria peaks angular measurements were obtained and recorded of the prominent features of the landscape. On the top of the north-east peak Mr. Belford left a powder flask, containing a record of Sir William Macgregor's ascent of the mountain, on June 11th, 1889, and that he had given to it the name of Mount Victoria. On the top of the south-east peak Sir William drove the stick he had used for resting the compass on when observing, and on the morning of the 13th June the expedition commenced the return journey, following almost their outward track, the fragments of the expedition were collected, and the coast reached in twelve days.

Although great care was exercised, the expedition was unable to identify places on the Owen Stanley Range named and described by Mr. Forbes. Taking that into consideration, together with the substance of his description of the Owen Stanley Range, which, although referring to many prominent features upon which names have been bestowed by the author, shows no geographic positions by which alone identification is possible, we are reluctantly constrained to admit these names, which, if judiciously and appropriately applied to well-defined places, would have received full recognition. It is also regrettable that in describing other localities to which he assigns positions, that explorer has omitted to supply the interesting data employed in their determination, which, to the science of astronomy alone, would have, at least, been interesting, and possibly to future travellers useful.

L'Egypte et la Géographie.—Under this title the Khedivial Geographical Society has just issued a work by its secretary, Dr. Frederic Bonola Bey, on the explorations accomplished in Egypt under the auspices of the dynasty of Mohammed Ali. Originally prepared as a report to be laid before the International Congress held in Paris, in 1889, the work has been retouched, and augmented by a few notes and an appendix. As it stands, the record is honourable to the rulers of Egypt, and must be taken into account in passing judgment upon their history. The lines of exploration were practically laid down by Mohammed Ali's plans for the extension of his dominion, and, whether under his authority or that of his successors, the agents were, necessarily, for the most part, Europeans or Americans. Dr. Bonola has classified the work of each reign, and summed up, in four pages, the Egyptian contributions to geographical knowledge. These are, in part: The astronomical determination of positions in the Delta, on the Nile to the Albert Nyanza, in Nubia, Kordofan, Darfur, on the Red Sea, in Harrar, and on the Blue Nile; triangulations in the Delta, the Fayum, and Kordofan; measurement of a base line in the plain of the Pyramids; ascertainment of levels in the Delta and the Fayum, and on the Isthmus of Suez; astronomical and hypsometrical observations; reconnaissances and explorations in Arabia, in the deserts of Egypt and Nubia, in the western oases, to the east and to the west of the Nile, and along the river to the Victoria Nyanza, in Kordofan and Darfur, in the Harrar, and on the coasts of Somaliland; the topographical survey of the Nile from the Mediterranean to the Equator, and the mapping of all Egypt proper and many of the provinces; geological researches in every part of the country, from the Blue Nile to Syria; the creation of three cities—Port Saïd, Ismaïlia, and Khartum—vast improvements at Alexandria and at Suez, the establishment of lighthouses on the Mediterranean and the Red Seas, and the building of railroads; the establishment of a postal and telegraph service between Egypt and the Sudan. Dr. Bonola notes the interesting fact that the last official dispatch received from the post-office at Khartum bore the date of November 4, 1884. The Egyptian railroads have now, it appears, a total length of 1,194 miles.—*Bulletin of the American Geographical Society, September, 1890.*

THE ISLAND OF KADAVU.

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THE island of Kadavu, which constitutes the most southerly inhabited portion of the Fiji group of islands, situated in the South Pacific Ocean, is bounded between the parallels of 18° 55′ and 19° 10′ south latitude, and 177° 57′ and 178° 30′ east longitude, Its aggregate length is therefore about 33 miles, its greatest breadth about 7¾ miles. and its area about 131 square miles. Some fifteen years ago Kadavu, chiefly owing to its geographical position and the natural advantages it afforded, was considered an island of very great importance, as it is conveniently situated, and easily accessible to the great ocean highway between Australia and San Francisco, and formerly used by the steamers trading between these respective places as a port of call. It is therefore, irrespective of its natural capabilities, its peculiar and singular features, and its inhabitants, of considerable historical renown, and worthy of a place in the annals of geographical research. An admiration of its natural beauty, and a keen interest and belief in its future prosperity, if its natural resources are properly utilised, prompts me to place on record a detailed description, from personal observation obtained by my official survey and exploration of the island during the year 1884.

The island itself is almost entirely composed of an irregular and broken mountain chain, which extends in a SW. and NE. direction to the extreme ends of the island, and in many places its offshoots and escarpments on the NW. and SE. terminate in steep and rugged gradients to the very water's edge, where the seething billows of the ocean dash their silvery spray far above the level of its bosom. These escarpments are in places distorted by deep fissures, forming rifts and rills, in some respects somewhat resembling modified lunar landscapes. The anticlinal axes of the ridges formed by these distortions are usually occupied by huge masses of conglomerate and boulders of various shapes and of many sizes, ranging from that of the minimum to the maximum. These are evidently ejecta from craters of a bygone period, now extinct. These boulders, which are scattered over the whole of the island, exhibit indications of having passed through stages of change subject to the influence and control of the erosive action of water and atmospheric agency, while marine characteristics exhibit themselves in many of the conglomerate masses, even in those located on the crown of the ranges, also on the slopes of the mountains, notwithstanding their very considerable altitude, and their rugged and precipitous character. By reason of their steep declivity, no heavy deposits of soil can form on some of the mountains and leading ridges, by which cause the surface-soil crust is of no useful depth. This characteristic is especially developed on surfaces denuded of timber and scrub, and covered only with long coarse grass, surface-creeping vines, tall reeds, and, in some places, small patches of bracken. On surfaces covered with timber, even on the highest mountains, the soil is of far greater depth, and possesses higher productive substances. Here we are furnished with an illustration of the complexity of cause and effect, inasmuch as the product actually becomes the producer, as, forsooth, the trees and shrubs by their offshoots and close proximity to one another retain, while the augmentation and decay of vegetable deposit annually increase and nurture, the soil.

This diversification of forest and vegetation produces a pleasant and picturesque effect by their variegated contrast, and the light reeds and grasses, in blending their beautiful bright colours, infuse their surroundings with rich and rare tints of shade, which lend brightness to the sombre aspect of the dense forest and jungle. This especially applies to the north-west or lee half of the island. Although many features on Kadavu proper point to its prehistoric condition, to its eruptive or seismic origin, such as the existence of distributed igneous rocks, extinct craters, &c., yet the small island of Ono, adjacent to its northern shores, and separated therefrom only by a narrow strait, perhaps possesses the more recent and marked traces, as the island itself is practically a volcanic cone, containing on its north-eastern section one of the largest and most recent extinct craters in the group. Its exterior wall faces the ocean, and towering several hundred feet above the base, culminates in a rugged and precipitous razor-backed rim, which in several places is practically inaccessible, and accessible points are at places dangerous, owing to the scoriaceous formation, which makes a foot-hold insecure. When carrying out a survey in its neighbourhood, triangulation of the crater walls was necessary, as measurements by the steel-band were altogether impracticable. The external walls are in several places almost entirely denuded of vegetation, and where occurring, it consists wholly of dry bracken and coarse grass, neither of which constitutes food for domestic animals, excepting during the dry season for goats, which appear to favour the locality. Internally some short grass of a palatable nature, also numerous stunted trees, appear to flourish, although by no means luxuriantly. They, however, afford a relief to the dry, barren-looking, brown, external surroundings. The most prominent feature in the main Kadavu Range is at Tavuki Isthmus, where it is actually cleft in two, leaving the island so narrow and the surface of the ground so low that during stormy weather the sea washes right across from either side. This natural conformation, which the natives call Yarabali, is however largely utilised by natives and Europeans, who drag their canoes and boats across from one side of the island to the other. The task is a comparatively easy one, as the seasoned stems of the leaves of the coco-nut palms, which are smooth and fibrous, are always kept lying transversely on the track, so that once a vessel is placed upon them it is easily dragged along. Thus we are provided with a primitive, although very natural, means, which to native and European alike is a great boon, of transporting ships across the island of Kadavu. On the south side of Tavuki Isthmus is situated the island of Galoa, a small but very fertile island, which was used as a head depot during the years of 1873-74, and 1875-77, when the San Francisco mail steamers made Galoa Harbour their Fijian port of call. The first steamer arrived at Galoa on December 25, 1873, and continued to call for a period of ten months, at which time the company failed. During an interval of over a year Galoa was almost deserted, until the second line of steamers began to call in November, 1875, and continued without intermission to May, 1877. On the south end of the island of Galoa, and inshore on the mainland of Kadavu, there are two beacons, used at one time to guide the mariner to a safe anchorage; other traces of bygone civilisation are still to be seen, such as storehouses constructed of sawn timber and painted white, &c. In those days the village of Wailevu, situated immediately inshore, presented all the indications of the attractiveness of life of a favourite watering-place. People from all parts of the group used to wait here for the mail steamer, and on her arrival passengers would land at the village and make short excursions in the interior, while others would wait the arrival of vessels to transport them to other parts of the group. But now, alas! the glory of Wailevu has departed; the long rank grass and vine hide the ruins of former dwellings; the once flourishing flower-beds give place to the weeds; th uncultivated fruit trees yield their increase to the birds of the air; and only for the presence of Mr. Simpson, a native trader, and his European wife, desolation would everywhere appear. I doubt whether Wailevu will ever resume its former vitality, as the removal of the capital from Levuka to Suva places the latter place in a most favourable position as the most convenient port of call for any line of ocean-going steamers trading between the Australasian continent and San Francisco or any part of Europe, apart from its importance as the chief port of entry of the group—unless, indeed, the high lands of Kadavu are utilised as the sanatorium of Fiji, for which they are well suited, in the event of which Wailevu would doubtless command the largest share of patronage. I shall now proceed to describe the physical features of the island.

As before stated, nearly all of Kadavu is occupied by the main watershed range and its offshoots, which are very much disintegrated, so that the whole interior of the island assumes a somewhat distorted appearance. The slopes and sides of the mountains and ranges are cut up and disfigured by deep, and in some instances broad, fissures and ravines, the sides of which are in many places precipitous and rugged, which condition, in conjunction with the large masses of decapitated and disintegrated rocks, small boulders, and stones, which are nearly everywhere scattered over the surface, render the ascent of the mountain faces tedious and difficult. The principal mountains and leading heights of the island are Mount Washington (Bukù Levu) 2,750 feet above sea-level, situated at the extreme SW. end. It acts as a most prominent landmark, and its top, which is nearly always enshrouded in dense vapour, is the first land in the group sighted by vessels approaching Fiji from the southward. It is covered with timber, reeds, and dense scrub, from its base to the summit. The timber and shrubs on the top of the mountain are very much scattered and dwarfed, and exhibit no indication of the powerful development so prominently shown in the timber and vegetation growing on the lower slopes; and the surface of the summit is so boggy that a traveller will sink to the knees, a predominating feature characteristic of all the leading heights of the island. The exposed position of the summit renders all vegetation subject to almost perpetual envelopment in dense, cool, moist columns of vapour, and to the fury of all the high winds peculiar to the Western Pacific, which divest the trees and shrubs of their foliage, which falling upon the surface of the ground in large quantities, become decomposed. The decomposed mass, being almost entirely excluded from the action of the sun's rays, is in a continual state of fermentation; the gases produced thereby accumulate much faster than the conditions of the atmosphere permit it to evaporate, and the substratum is almost impervious, so that the moisture from the decomposed mass of vegetable matter and the rain water have no rapid means of escape, which conditions, combined with the foregoing, are sufficient to satisfactorily account for the boggy nature of the surface. Easterly and north-easterly from Mount Washington, the next heights, leading in consecutive order, are represented by Korotusara, 1,610ft.; Mount Moala, 1,643ft.; Mount Creak, 1,140ft.; Asses' Ears, 1,600ft.; Mount Challenger, 2,180ft.; Mounts Yale and Korolevu, 1,820ft. The whole of the watershed range is, in Fijian parlance, designated Salevu-ni-Yalo, so named from spiritualistic belief—Yalo or Yalodra, spirit. According to the Fijian's belief in their idolatrous days, and I firmly believe up to this present date (1889), the spirits of the deceased when departed from the natural body were supposed to follow this range to its terminal point called Naigoro, at the extreme eastern end of the island, and from thence depart to their eternal home, some place outside the limits of our terraqueous globe or to the river Styx. There are no rivers in the island. The rain and natural waters are drained by numerous creeks, some of which are tidal and deep enough to float ordinary sailing boats. The coast line of Kadavu, which on all sides of the island is very broken and rugged, is on its south-east section protected from the heavy billows of the Pacific Ocean by a wall of coral extending from Tobanidavigele, at the extreme south-west end of the island, to D'Urville Channel, seventeen miles north from its north-east end, and called the Great Astrolabe Reef. In several places the proximity of this reef to the coast line renders inshore navigation by steamers and ocean-going vessels impossible, and boat navigation, which can only be practically undertaken at or near high water, intricate and in many places dangerous. This is particularly the case in the vicinity of Ucuna-garalevu, where the water is very shallow, and the careering tide, which resembles the rapids of a great river, dash inshore with angry fury and washes the rocks on the beach. The passes of Davigele, Yauravu, Galoa, Soso, Korolevu, and Naigaro, in the Great Barrier Reef, however, afford ample facilities for coastal navigation. The north-west coast of the island, although possessing the natural advantage of shelter from the prevailing south-east winds, is, however, less favourably circumstanced than the one just described with regard to protection from heavy seas, as in the absence of the Great Barrier Reef the coast is studded with a perfect labyrinth of detached coral patches, which, although in places close enough to one another to obstruct free navigation, are not sufficiently united to be of any practical utility as a breakwater. As before mentioned, about two miles north from the north-east end of Kadavu is situated the small island of Ono, which, like the former, is a series of hills, culminating in the centre of the island to an altitude of 1,160 feet. Although the soil on Ono is very rich and dry, yet there is no timber on its surface excepting small patches of stunted scrub trees. The whole of its surface is covered with large and small stone boulders, which render walking very obstructive and tedious.

SOIL.

The soil of Kadavu, although generally similar in substance to that of the other islands of the group, is somewhat different in distribution. The flat lands on the south-west section of the island are limited to small patches at the mouths of narrow valleys, and to narrow strips between the base of the mountain ranges and the sea-shore. These are composed of rich *débris* robbed from the mountain slopes by the annual tropical rains with which the whole of the group is so copiously supplied. The slightly tenacious nature of the crust on the mountain slopes, however, as compared with other parts of the group, renders it in a small degree somewhat impervious to heavy rain, and consequently the annual percentage of soil dislodged is largely minimised by local conditions. Portions of the available flats are utilised by the natives for banana, yam, coco-nut, sugar, and vegetable planting for their domestic wants, and the residue, although in every respect equal, and in many places superior to that cultivated, yields its substance to the nourishment of wild rank grass, shrubs, reeds, and other tropical vegetation, which, in Kadavu, in common with the adjacent islands, grow in profuse luxuriance. Here the wild flowering plants are in perpetual blossom, and the scarlet Hibiscus, after quaffing the refreshing nectar of heaven's nightly dew, rears its drooping head heavenwards in the early morn, and, as if it were performing an act of profound devotion, unfolds its broad deep red-tinted petals to the rising sun, to inhale fresh vigour from its life-giving rays. Shady groves and nooks are carpeted with the falling leaves of trees and the decayed flowers of the uncultivated shrubs, and their combined perfumes are so infused with the atmosphere that its inhalation produces an intoxicating influence over all sensitive individuals subject to its magic spell. Here we may stand face to face with Nature, and behold all her wealth of beauty transfused into one another; and as we wonder at all the simplicity of the beautiful graces with which all her handiwork is adorned, we may also observe the unfolding, as it were, of all the complex functions of living organisms exhibited in the luxuriance of her verdure. The soil contained in the north-east section of the island varies slightly in quality from and is somewhat differently distributed to that just described. The greatest extent of flat land is at Lawaki, Waiselima, and Korolevu at the extreme end of the island. The soil of these localities, although only comprised within flats of a very limited extent, is of a rich compound of alluvium *débris* containing a large percentage of phosphates, and highly suitable for the production of marvellous crops of all kinds of tropical and semi-tropical produce, as evidenced by an analysis of the soil itself, and indelibly proved by an inspection of the native plantations. The south-east slopes, which are entirely unutilised, are crusted with a marvellously rich prolific soil annually enriched by the profuse decaying vegetation and the deposits of moist vapour intercepted by the high background ranges. All along the seashore on both sides of the island, at the heads of the numerous bays and inlets, especially between Garalevu and Matasa, there are numerous patches of flat land composed of the *débris* carried down by the agency of water from the high lands These flats are mostly used by the native population for their villages and plantations, and they are also generally planted with flourishing groves of the beautiful coco-nut palm, of which more anon. In accordance with unalterable and well-known natural laws, also in harmonious accord with the conditions existing throughout the group, the south-east slopes of Kadavu are more productive of vegetation than the opposite or sheltered side, although it is not everywhere uniform, as may easily be understood through the irregular distribution of the soil. There are altogether about forty European land claims in Kadavu, containing areas varying from 1 acre to 400 acres; but, unfortunately, out of the whole of the claimants there are only three who make the island their home, namely, Messrs. Simpson, a trader, Blacklock, boat-builder, and Sassen, also a boat-builder and trader, all three of whom are very old residents of Kadavu.* This minimum European population is a source for much regret, as the natural and artificial capabilities of the island are not made use of, progress in commerce and agriculture is stagnated, many broad acres of the most fertile land, which could make many poor families happy and afford prosperous and flourishing homes for many, are waste and desolate, and social progress, if not altogether degenerative, is greatly retarded.

FLORA.

Of all fruit-bearing palms and trees the coco-nut palm is, in my opinion, pre-eminent to all others. Its utility is unrivalled, and probably unlimited. On comparatively barren rocky islets and on treacherous low-lying shores its distinctive, majestic head towering over, and so markedly and unmistakably dissimilar to all other vegetation, is a beacon to the mariner; in torrid climes, where it attains the zenith of its glory, it is unsurpassed by all other landmarks; and on many a lonely spot faithfully and well warns the sea-king of dangerous shores. The fibrous and tenacious nature of its timber renders it celebrated for special purposes in the building of native ships of war, houses, &c., while its other component parts, the feather-like leaves for mats, thatch, baskets, sails, &c., the core of the palm for salad, the fibre of the husk for ropes, mats, nails, &c., and the nut itself for food, drink, milk, toddy, oil, spoons, bowls, and other utensils, &c., are renowned. In consideration of the importance of the foregoing conditions, also with a view to instruct many who never have and probably never will see the palm, also those who have seen and learned not, I propose to give a detailed description of this graceful and truly wonderful palm.

Some writers appear to doubt the possibility of a self-planted coco-nut palm, but, to me, the question of possibility or probability has never for one moment caused a conflicting thought. From personal observation, apart from consideration of the natural laws affecting the germ of plant life, I have no hesitation in saying that, under favourable and congenial conditions of clime and soil, the coco-nut will, unaided, save by natural process, take firm hold of the soil and develope into a graceful palm. Those familiar with the natural conditions of the coco-nut palm, and who are also original thinkers, accustomed to form conclusions from truly logical reasoning, and to accept deductions from a true reconciliation of cause and effect, cannot doubt my authority. The coco-nut palm springs from the germination of a vital substance contained within the strong walls of a large spherical nut-shell composed of an exceedingly hard combustible substance, brought about by the consolidation of certain fibre-yielding substances, produced by the development of the nut. This shell is covered with a thick husk of strong fibre, and the whole intact nut, of which there are at least six different varieties in the Western Pacific, all slightly dissimilar from one another, and all which are not by any means triangular in shape, as described in the "Encyclopædia Britannica," when placed either by hand or by accident on the surface of, or some inches below, fertile soil, shoots out numerous roots from the husk, and the seed germinates from within, forcing a long thin sprout of leaf through the fibrous casing; the whole embryo thus conceived continues, like all the first beginnings of nature, to develop, until after the lapse of many years the graceful head of the palm is raised far above the surface. The coco-nut palm, which is slow in developing, yields its first crop of fully-developed nuts about the seventh year of its age, and continues from that period of its existence to ripe old age to yield a yearly increase. In some favourable localities some varieties of coco-nut palms will bear fruit in the fifth and sixth years of their age, but in every such case brought under my notice the nuts were imperfectly developed.

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* A Wesleyan missionary also resides on the island.

During the first season of the year, the shell of the nut, which at this stage is of a whitish colour, is thin and somewhat flexible, and contains about a pint measure of the most delicious liquid, in colour somewhat resembling ginger-beer, of a slightly sweetish and most agreeable and satisfying taste, peculiar to itself—erroneously called milk. Its interior walls are lined with a whitish fleshy substance, first formed by the cohesion of glutinous matter to the walls, quite thin, tenacious, and soft enough to be easily removed from the shell by the application of a slight pressure of the thumb, or by an ordinary dessert spoon. It is only when at this particular stage of development that the liquid is perfect and wholesome to drink, and the kernel nutritious and palatable for man to eat. From this stage, when the shell has obtained its maximum internal capacity, the kernel gradually consolidates, and growing rapidly in thickness, absorbs the encompassed liquid, which rapidly changes into a slightly tart consistency, with a tendency to effervescence—it is only when at this particular stage that an over indulgence will probably produce an irritating effect on the urinary organs—and gradually diminishing in quantity eventually becomes altogether absorbed, leaving only a small, round, yellowish spongy substance about the size of a hen's egg. At this stage the whole sap contained in the external husk has altogether disappeared, leaving only the dry fibre, which gives the nut an appearance of old age, such as may be seen in market places, and on board homeward-bound ships from tropical countries. The kernel has attained its greatest possible development, and is white, thick, hard, and ridgy—the coco-nut of commerce as sold by confectioners and street-vendors in Great Britain and elsewhere. It is from the fully or partially matured kernel that the real coco-nut milk is obtained. The natives grate the kernel into a coarse powder by means of a rectangular dentrictic piece of iron, fixed into the end of a bar of wood, which rests on a fulcrum, and kept firmly in position by the weight of the operator, who, with a half of the coco-nut shell, containing half the kernel, placed in the palm of his hand, and the scraper projecting from his fork, grates up the whole of the kernel. After this primitive operation, the powder is sprinkled over with water, and a large, smooth, spherical red-hot stone is laid on and rolled over the whole mass, which, being promptly and dexterously strained, yields the true milk of the coco-nut. This milk is white, about the same consistency as cream, and containing a percentage of oily matter. It is agreeably sweet, and is commonly used with porridge. I have also used it with tea and coffee, and have found it to answer as a very good substitute for cow's milk. The kernel, when thus fully matured, is also removed from the shell, cut up into three or four pieces, dried on a "bather" in the sun, and exported as copra, at the rate of about from £10 per ton, from which the famous coco nut oil is extracted. The period of drying, which of course is regulated by the condition of the atmosphere, occupies about three or four days, at the end of which time the kernel has lost about half its original weight. Each tree yields about 150 nuts annually, of which 4,000 are required to make a ton of copra. The shell, which makes good fuel, is used for drinking-vessels and for culinary purposes. The fibre of the husk, known as coir, is used by the natives for an almost unlimited variety of purposes, and with Europeans its uses are of course well known. The wood of the palm, being fibrous, is, when newly cut, quite flexible. It is justly prized by the Fijians, who use it for the woodwork of their houses, and for numerous other purposes.

The bread-fruit is grown abundantly in Kadavu, on the fertile flats skirting the seashore; also in the valleys the tree flourishes, and the fruit attains its greatest degree of development. Apart from its food-producing qualities, the tree possesses many properties of economic value. It yields a glutinous substance of a somewhat light colour, which, upon exposure to the atmosphere, consolidates, and assumes such powerful tenacious properties that the application of its substance is largely used for the cementing of the planks of canoes and other vessels requiring the application of a binding substance. The inner casing-leaves of the pods are also used as a substitute for fine sand-paper, especially in polishing trinkets made of the tortoise-shell, for which use it is justly valued. The fruit of the tree is cooked, either by boiling, roasting, or by baking in the earthen and stone oven, and afterwards prepared in various ways for food, being sometimes pounded up with the coco-nut milk, made into a delicious pudding, and otherwise eaten in its pure state, either form of which is excellent.

Many varieties of esculents are grown and cultivated by the native lords of the soil. Of these, the taro (*Colocasia antiquorum*), of which there are two varieties, the wet and the dry, is said to possess the more powerful nutritious substances for human food. It is cooked by the same process as the bread-fruit, and eaten in similarly prepared forms. The leaf, which, when fully developed, is amongst the most perfect in symmetry and beauty in the vegetable kingdom, also the most useful, is in shape somewhat after the form of the heart of a large animal. To the touch, and in external appearance, it resembles a velvety substance. It is utilised by the natives for drinking and water-carrying purposes, and for such uses it is much preferable to the manufactured European article. When boiled and mashed up with butter it forms one of the most wholesome and delicious table vegetables—spinage. It acts on the liver, and its periodical use will insure perfect regularity of and act as a stimulant to the digestive organisation. I strongly recommend its use to dyspeptic subjects, and to new arrivals in the colony. Its native name is *dalo*. Tobacco and yagona (*Piper methysticum*) are cultivated, but, excepting several varieties of bananas, the natives show no special desire to plant fruit. They appear quite content with Nature's offerings. Several varieties of oranges, mangoes, custard-apples, lemons, limes, and pine-apples grow in a practically wild state. They might at one time have been planted, but their development and nourishment are now left entirely to Nature's control and care amongst the opulence of her offspring in the wilds of the forest. The shady bowers of the forest glens are overhanging and adorned with the branches and foliage of the orange trees. Of these there are the very large granulated, coarse-grained, thick-skinned variety, about six inches in diameter, the bitter variety used for preserves, and several of the sweet-eating varieties, whose skins contain a superabundance of the usual oily substance peculiar to the skins of oranges, which in Fiji retards and prevents them from properly maturing. The surface of the ground is thickly covered with the fallen oranges, and the whole surrounding atmosphere infused with their delicious perfume, which appears to steal upon the senses, so that those subject to its influence are intoxicated with the enthralling gentle breezes of the forest recesses, and become lost in admiration of Nature's exhaustless wealth and munificence.

The ivi tree, or Polynesian chestnut (*Inocarpus edulis*), also flourishes in Kadavu, where its economic properties and umbrageous nature are rightly prized. It is when exposed to the fierce rays of the torrid sun that its cool shade is to white and black alike hailed with joy. The nut, which is enclosed in a hard, thick, strong, fibrous casing, is of an oval shape, and when boiled it is an agreeable and palatable food. In times when cultivated food is scarce, the natives are dependent largely upon the ivi nut for sustenance.

Crotons, hibiscus, several varieties of wild flowers, and many ornamental shrubs grow in wild profusion over many parts of the island. The forest, although much scattered in patches, and inextensive in magnitude, produces the largest trees in the Fiji group, whose timbers, for local ship, boat, and house building purposes, are highly valued. Several varieties are also well suited for cabinet-making purposes, especially the vesi (*Afzelia bijuga*) and dilo (*Calophyllum inophyllum*). Their timbers are close-grained, and take a fine polish. For ship and boat building purposes the following timber trees are the best: dakua (*Dammara vitiensis*), vivi (*Serianthes myriadenia*), damanu (*Calophyllum burmanni*), also the vesi and the dilo.

Of domestic animals, there is the pig, the goat, the dog, and the cat. The feathered family is represented by the fowl, the turkey, and the duck, also several varieties of pigeons; parrots, hawks, owls, and a number of small birds of the most beautiful and brilliant plumage, abound in the shades of the forest. Beautiful butterflies, moths, beetles, flies, and numerous other insects of various shapes, shades, and sizes, are at home in the cover of the island verdure. The rat and flying-fox are perhaps the only animals indigenous to Fiji. The small number of snakes inhabiting the branches of the forest trees are of a non-venomous kind. They are small in size, and at all times appear in a torpid state.

Fresh-water prawns and eels are plentiful in the creeks, and several varieties of land-crabs are common. The sea-shore and reefs abound in shell-fish of various description, and plentiful supplies of scaled fishes are caught by nets in the shallow waters of the barrier and fringing reef. Tortoises are also caught, their flesh eaten by the native aristocracy, and their shell used for ornamental and commercial purposes.

NATIVES.

The native population of Kadavu numbers about 7,500, who live in separate towns or villages, in different districts. According to constitutional laws and usages, each district is subject to its deputy chief, called Buli, and surnamed after the district to which he belongs, who again in turn is responsible to the provincial chief, whose official title is Roko, and who, as recognised head, is their official representative to the State, also their hereditary representative in the native Parliament. This Roko, who is only appointed by the Crown, receives a salary from the State, and is allowed an official secretary, who is designated Vunivola. The reigning Roko, who is far advanced in years, is without teeth, and quite blind. When enjoying the hospitality of his court, nothing used to delight me more than waiting upon him in the morning with a cup of coffee, and even holding the cup to his mouth; and I am almost sure our affection was mutual. He was kind and obliging, and possessed all the qualities of a noble mind and of a good ruler, with gentleness in his manner, and resolution in all his actions. His native name is Qara-ni-Valu, literally interpreted Cave-of-war, a name which in every respect appears from his early history to have been quite applicable, as he possesses a giant frame, and the history of his early exploits in warfare is quite thrilling, even to the modern mind. The natives of Kadavu are, in common with their neighbours of the adjacent islands, a physically strong and healthy people. A few suffer from ophthalmia, ringworm, and elephantiasis, and a few cases of phthisis may occasionally be met with, but this is by no means common. They are somewhat light in colour, with immense broad chests, fine arms, and beautifully-formed limbs, bright eyes, and although generally somewhat broad, the features are often intelligent. They are, as a rule, vivacious, kind, obliging, courteous, and hospitable. They are not over-sensitive subjects, consequently slow to take offence, and so, unlike their European brethren, they rarely lose mental control. This latter characteristic is a distinctive feature in their temperament. In social discussions, at State and public assemblages, and at legal tribunals, they exhibit superior tact to the average European by their cool and collected utterances. The plebeian and the king are alike gifted in oratory. Stammering and stuttering in public speech are unknown to them. They are born elocutionists and accomplished rhetoricians. Their reasoning faculties are moderately good, and their social organs are generally most harmoniously arranged. They have keen perceptive faculties, and are good at natural design. They are good at imitation, remarkably clever caricaturists, and natural cynics. They laugh at their white-skinned brethren for their characteristic accomplishments, which have become proverbial, in readily losing mental control. When in that condition they are dubbed "fools." They have a keen sense of justice, and discourage acts of dishonour. They are keen traders, and like to obtain full value for their goods. Charity in its pure and broader aspect, when uncontaminated by European intercourse, reigns in its natural state in their midst, and with them it begins at home. Hospitality is one of the characteristics of the Kadavu natives: it makes itself felt, and extends in every direction. In their villages, amongst themselves, to neighbouring villages, to strangers of their own class, and to all classes and conditions of Europeans the frugal board of hospitality is freely spread. Tardiness with food is absolutely foreign to their nature. One of their chief aims in life is to provide an abundant supply of food for their wants, and, as they give liberally to others, so, too, they expect, when required, liberality in return. The nature of my official duties necessitated an almost continuous intercourse with the natives of Kadavu and other parts of Fiji. I have camped for many months continuously in their midst; I have for years eaten of their products; it is therefore with much assurance and the fullest confidence that I pronounce them amongst the most hospitable, liberal, and charitable race of people upon the earth. European hospitality and charity at any time is mythical, but when placed in contrast with that of the Fijian it sinks into insignificance.

Petty quarrelling, jealousy, division, and dissension are uncommon to them. They religiously observe their social laws and usages, and the slightest infringement thereof insures prompt and adequate punishment to the offender. Under the old native tribal *régime* the punishment usually inflicted upon delinquents was torture, degradation, and death.

They are a servile people, and loyalty to their chief is a prevailing feature in their character. In all things, and at all times, his commands are law, and formerly the sacrifice of life in their execution was considered honourable and heroic. Human sacrifice on State and festive occasions was one of the clauses in their social code. Whenever the death of a chief or prince occurred, young and handsome women, gaily attired in gorgeous native robes, would voluntarily present themselves at the obsequies, and demand to be buried alive, as an illustration of devotion to the departed one. Likewise, at the building of a chief's or other important house, when the pit was dug ready to receive the central supporting pillar of the house, two or three men also gaily attired would deliberately jump into it, and with due solemnity allow the pillar to be lowered, and the earth filled in upon their living forms. This, with the launching of war-canoes over the prostrate bodies of living men, was a common, and to them necessary, method of human sacrifice. Strangulation of the sick and maimed was formerly the customary practice amongst the Kadavu tribe. Although far behind the times in modern advancement, they were nevertheless several steps ahead of it in logical ideas, as they practically believed in the survival of the fittest.

Based upon and in accordance with natural laws, their social organisations are elaborate and apparently perfect. It is when attempting to incorporate the native social and moral laws with that of a foreign civilised nation that friction and complications arise. Left in the enjoyment of their social usages and rights, the natives of a country will thrive; take that away from them, and make them amenable and subservient to that of civilisation, and they will surely degenerate. They possess a parliament and a court of law, both of which are presided over by ministers and magistrates of their own class, before whom all disputes and grievances must be dealt with. They have a gaol in the capital, and every village possesses its officer of the law in the person of police-constable, the number of each village being proportional to its population. They have churches, state and mission schools in charge of native teachers, where the youths receive education and religious instruction. They hold devotional service on Sundays and on some of the week-days, and never neglect evening and occasionally have morning prayers in their houses. The former is usually offered just before retiring for the night. They pray apparently earnestly and aloud, with marvellous fluency. In the native teacher's house the evening and morning prayers are usually preceded by the singing of a hymn or psalm, the incantation of which sounds most melodious from a short distance. Music is taught in the schools, more especially in those attached to the Roman Catholic mission stations, and presided over by those devoted self-sacrificing and learned French priests, of which the stations situated at Levuka and Bureta, Ovalau, supply worthy representatives.

No companionship appears to exist betwixt man and wife. She is generally the slave of her lord, and apparently she has no ambition to improve her state. Her work usually consists of fishing, mat, cloth, and pottery making, plantation weeding, the procuring of firewood, the carrying, cooking, and serving of food, the whole of the household duties, the dramatic entertainment of the men, and numerous other minor and auxiliary labours. The young women are pleasant, graceful, kind, vivacious, and possess many natural endearing charms, and imperfect development is of rare occurrence amongst them. Maidens are always readily distinguished by a few long narrow plaits of hair hanging down the side of their heads. When they become wives these maidenly ornaments are cut off. They marry according to English marriage law, and the application of the law of divorce is as rare as it is novel. Infidelity and immoral practices are extremely rare amongst the female section of the Kadavu community. In this respect their characters are truly worthy of emulation. Their dwelling-houses, which are neatly built of timber, reeds, and thatch, are sometimes beautifully ornamented internally with designs wrought in coloured sennit made from the coco-nut fibre. The floors are covered with beautifully wrought mats; and when well built and finished a Fijian house is the most cool and comfortable that can be constructed to meet the requirements of a tropical climate. The larger and more important houses are built upon foundations of from 2ft. to 10ft. in height, constructed of stone and coral, and are usually approached at the main entrance by means of a massive plank of hard wood placed at an angle, the inclination of which is governed by the height of the foundation, and the length of itself, with footsteps hewn out of the solid wood. This plank, needless to say, is more easily traversed by the barefooted natives than by the booted whites. Houses of this class are usually thatched on the roof with the leaf of the sugar-cane, which lasts for many years, and whose durability is unsurpassed for this special purpose. The interior front section is occupied by one or more square fire-places, and the extreme end by an elevated dais composed of dried vegetation, and covered with mats, the whole imposing structure forming a huge bed, the height and area of which depend upon the importance of its owner. The Kadavuans are thorough practical agriculturists, and their importance as food-producers is fully recognised by all classes of colonists, who are dependent almost altogether upon the yield of their harvest for vegetable food. They pay their taxes in kind, and their plantations produce, in addition to that required for their own use, sufficient for the consumption of a considerable export trade to European centres in different parts of the group. They plant tobacco, sugar-cane, maize, cotton, kava (*Piper methysticum*), yams, several varieties of sweet potatoes, pumpkins, arrowroot, beans, taro, &c. They are expert irrigationists, and its value in enriching and improving land has long been known to them. Their agricultural land may be divided into two classes—alluvium flats and hillside slopes. Plantations on the former are in all cases bounded by natural boundaries, and subdivided artificially into sections of uniform areas representing individual shares. That these artificial division marks may consist of stones, mud-dykes, furrows, or stakes will altogether depend upon natural conditions and individual peculiarities. Natural boundaries are usually creeks and rivulets whose waters, being ever permanent, are conducted to the cultivated subdivisions by artificial channels and wooden troughs. Hillside plantations are usually terraced and irrigated by the waters of neighbouring creeks gravitated thither, sometimes from considerable distances, through bamboos and artificial races. Although both classes of plantations show great agricultural method and skill, the latter presents greater artistic features, and when well executed it is somewhat picturesque. The utilisation of astronomy as handmaiden to agriculture was, even from the earliest ages of the colony, fully recognised. That the heavenly bodies were methodically observed by the Kadavuans is clearly exemplified by their application of stellar cyclic periods to the regulation of the seasons. Even now, notwithstanding the advantages of civilisation, the times for sowing and for reaping are generally indicated by the apparent positions of the constellations, that of the Pleiades (*Vrusa*), Crucis (*Na Iri*), and Orion (*Na Ga*), being prominent.

Although cannibalism, practised within narrow and contracted limits, no doubt existed, its dramatic and awe-inspiring history, for which European missionaries are largely responsible, is obviously grossly exaggerated, and calculated to inflict grievous injury upon the natives and their possessions. Delinquents were sometimes punished by death. They were usually attired in fantastical native garments, bound hand and foot, and placed uncomfortably close to the edge of the oven (*lovo*) where they were compelled to watch the process of heating and preparing it for their reception. When the stones forming the lining of the oven became red hot, the unfortunate victims, who during the process were scorched by the intensity of its heat, were dealt a terrible and fatal blow on the back of the head with a club, and pitched into the yawning oven! The religion is Protestant and Roman Catholic; and although apparently devout worshippers, I am, from close observation of actions and numerous confessions, constrained to believe they do not yet understand modern Christianity from the national standpoint. They listen attentively to the promulgation of religious doctrine, but they are unable to grasp its substance, and unwilling to believe Scriptural texts.

Mr. W. L. Allardyce, who represents the Government as stipendiary magistrate and native tax-collector, pays periodical visits to the island. Mr. Allardyce is always ready to render personal assistance and supply information, and his services were sometimes valuable to me in recording the time when engaged conducting my astronomical observations, especially in my observation of the total eclipse of the moon on 10th April, 1884; also those necessary for geodetic and trigonometrical operations. It is therefore with much pleasure that I associate his name with that interesting work.

CLIMATE.

From a climatic point of view Kadavu occupies the enviable position of the Fiji group. Its high lands and general physical conditions, combined with its geographical position, are favourable to moderate and uniform range of temperature, which combination of causes tends to produce favourable climatic effects conducive to healthy conditions in their various aspects. Considered as essentially tropical, the climate of Kadavu is almost perfect. Tempered by the cool south-east trade-winds, from the beginning of April till the end of November the atmosphere is cool and enjoyable on the lower localities, while its condition on the high lands is manifestly cool, refreshing, and bracing. The climate is dry, and notwithstanding the usual periodical wet season so common in the tropics, that to which Kadavu is subjected is mild and of short duration. Thus it follows that the sum of the foregoing conditions, when combined with its beautiful, picturesque natural scenery, provides all the requirements necessary to render Kadavu congenial to the life and well-being of mankind. Other conditions being equal, I would scarcely wish a more charming place in which to pass my life. The absence of systematic meteorological observations for a useful and reliable period preclude the supply of indicated measurements. In conclusion, may I be permitted to add, that if the many months of solitude and hardships, not unaccompanied by actual mental and physical pain, devoted to survey and scientific exploration in Kadavu, tend to promote the laudable objects of your Society, in however small a degree, I shall consider my labours amply repaid.

This paper was also sent to the Royal Scottish Geographical Society and printed in December, 1889 (with a capital map of the island), in the *Scottish Geographical Magazine.*

The Merv Oasis.—After the annexation of Merv, a part of that territory, comprising about 386 square miles, was formed into a private estate for the Emperor of Russia. It lies twenty-eight miles from the town of Merv and near the railway station of Baïram-Ali. About forty miles from this station an immense dam has nearly been completed to check the waters of the Murgab, which will be used for the irrigation of the property. Next spring, when the irrigation canals have been constructed, a fifth of the estate will be colonised. For this purpose Mohammedan settlers from Ferghana will be chosen, these being best able to endure the dry and hot climate of the Merv oasis, where the thermometer often stands in summer as high as 112° to 120° F.—*Deutsche Rundschau* Bd. xii. Heft 11.

RHINS OF GALLOWAY: A COLONIAL COMPARISON.

By Mr. W. G. BLACK, F.R.C.S.E., F.R.M.S.

[Read to the Members in the Library, Tuesday, July 22nd, 1890.]

SINCE visiting several localties in the neighbourhood of Stranraer, I have been impressed with the idea of the similarity of this part of Wigtonshire in physical conformation to that of the Cape district in South Africa.

At the south-west extremity of Scotland there is a peninsula with two points directed north and south, and a face directed west, and separating the Rhins of Galloway from the mainland are two bays looking north and south, and an intervening isthmus on which lies the town of Stranraer. How much the same condition of things is found at the Cape, as may be seen by referring to any map of South Africa.

There are two bays—north, Table Bay, and south, False Bay, with an isthmus between them, the Cape Flats, on one corner of which lies Cape Town. The peninsula has a north point called Green Point, and a south point called Cape Point, and a face looking west with a rocky coast, much like the Galloway peninsula about Port Patrick. This tract again has a northern end at Kirkholm Point, and a southern at the Mull of Galloway, all high land and rocky. The main coast line tends north in Galloway to Ayrshire, and also north in the Cape to Malmesbury, and the south coast line in Wigtonshire goes east to Kirkcudbright, and in the Cape east to Swellendam.

The similarity is further borne out by the high ranges of mountains, the Hottentot Hollands at the Cape on the mainland, and by the Benerard and others of the Braid Fell range here in the Luce district of Galloway. The only, and a great difference consists in the absence of a Table Mountain Range in Galloway on the Rhins, but there are some low hills to represent it, Craighead and Bannore. The geological features also seem analogous, as there are silurian strata in both as the bed rock all over, with granite showing here and there, at the Cape, and basalt in Galloway instead. Here again we come across the real feature which accentuates the geological difference between the two, and causes the absence of a table mountain in Galloway. This seems to be due to denudation of the carboniferous strata from Galloway, which exists only in a semilunar patch at the west coast of Loch Ryan, and there is none left to form a mountain.

At the Cape the secondary horizontal carboniferous sandstones remain in that range to form Table Mountain, though they are denuded from the Cape flats as in Galloway in the Luce flats.

Finally, the analogy between the two may be carried into an examination of the causes of the present physical conformation of the district. It is likely that both Table Bay and Loch Ryan were formed by irruptions of the sea by north-west storms breaking down the rocky barriers that crossed their mouths, and washing in upon the lower country behind them to the south-east. The remains of these barriers are to be distinguished in Robben Island, at the Cape, and the Scaur at Loch Ryan. Luce Bay, on the other hand, as well as False Bay, were probably denuded estuaries of former rivers that ran through their middles to the south, which have been widened out right and left by south-west and south-east gales into open bays.

Under this idea the Luce and Piltanton and other small brooklets were feeders of a larger river in the middle of Luce Bay that ran towards the rocky islets at the mouth. In the same way at the Cape the streams from the Hottentot Holland Mountains, the Erste river, and that at Somerset West, poured their contents into a larger river that ran out down the middle of False Bay. The barenness of the silurian strata all over Galloway shows the paucity of deposition of rock strata aftewards, and only a long patch of carboniferous is found along the west coast of Loch Ryan at the present day. This may, however, be representative of these strata that filled up the hollow between the Luce and Leswalt ranges of hills east and west of Stranraer. The rest of it south over the Stoneykirk Flats and Luce Bay have been swept away, as it has been over the Cape Flats and False Bay.

The analogy between the two districts may be still further extended by considering the modern appropriation of each by towns and harbours and properties which, however, are only the decorations of topography. Cape Town and Stranraer are very comparable in being ports and railway termini, and similarly situated at the south-west end of their respective bays. Port Patrick again can be compared to Hovet's Bay on the Cape, as both are used for fishing purposes, and both are much exposed to storms from the south-west. Glen Luce in many ways may be considered another Stellenbosch, called colloquially Sleepy Hollow, as both recline in shady valleys, and both are somewhat literary and bucolic in life and pursuits· The village of Sandheads looks like Muysenberg, and Chapel Rossan seems a suitable Kalk Bay in miniature and prospects, and nothing can be better assimilated than Dunmore in the one place and Simon's Bay in the other as small harbours. And as to properties, who would not at once pitch upon the mansions of Ardwell House and Logan House as representatives of the two Constantias, of the Cloetes, and Van Reenan, at Tynberg? The Grand Seigneur in each will be the Lochnau Castle with Sir Andrew Agnew, and Newlands associated with the residence of the Governor of the Cape.

Lastly, on the other side of the bay we may venture to associate the Hays of Dunragett with the Maskells of Morgenstein, at Somerset West. The tracts of railways are also on very similar lines, and the one wanting to complete the system is the proposed one from Stranraer to Dunumore, to be compared to that from Cape Town to Simon's Bay, and the termini are at Cape Town and Stranraer.

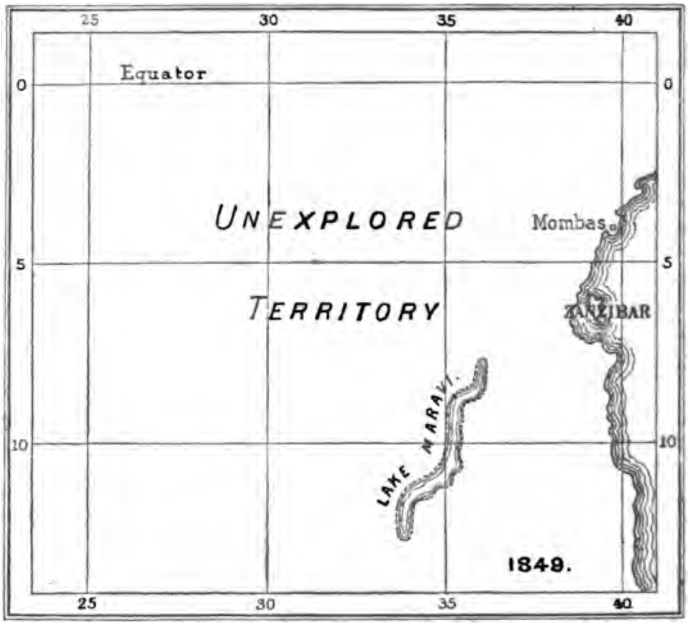
Air Currents Above Us.—Mr. F. Galton, in some recent remarks on the importance of observing the upper currents of the air, said that the great thing we now want to know is the state of the air above us; for we are at the bottom of an aerial ocean, and all we know is what takes place at the bottom. Imagine how little a marine animal that lived at the bottom of the sea, having the same intelligence as ourselves, would know of the currents above. That is precisely our position. We understand only one horizontal section of this superincumbent mass. Captain H. Toynbee, of England, commenting on Mr. Galton's remarks, observed that it seems possible that cheap balloons may be used to advantage where upper clouds are not seen. He thinks this is proved by the adventure of an aeronaut who went to Madras a while ago and advertised an ascent, fixing the hour when the sea breeze had set in, with the object of being driven over the land. There were no upper clouds to show the motion of the upper currents of air. Mr. Bayley, of the Revenue Board of Madras, feared that there might be an upper current of air which would take the man out to sea. He took his glass and watched the balloon from his office window. At first, in the lower stratum of air, the balloon drifted quickly to the westward over the land; but soon, giving a peculiar twist, it moved seaward so quickly that although the man pulled the string of the valve, allowing the gas to escape very freely, he fell into the sea two or three miles from the land. Boats in the harbour hurried out and saved him.—*Goldthwaite's Geographical Magazine, April, 1891.*

THE LAKES OF EASTERN CENTRAL AFRICA.

By Mr. J. HOWARD REED.—(*See Maps.*)*

Addressed to the Members in the Library, Tuesday, July 22, 1890.]

At the present time the geography of Central Africa is continually under discussion. This is, of course, largely due to the recent remarkable expedition of our distinguished member, Mr. H. M. Stanley, for the relief and rescue of Emin Pasha, so gallantly and successfully carried out by the great traveller and his brave companions. We find also a grand scramble, for African territory, taking place among the states of Europe, in which, each power is doing its best to become the recognized master of certain enormous tracts of country. At such a time it may be of interest to the members of the Manchester Geographical Society to consider briefly, concisely, and graphically the development of our knowledge, during the last forty years, of one of the most important geographical features of the "dark continent," viz., the Lakes of Eastern Central Africa.



No. 1.—Map of Eastern Equatorial Africa in 1849.

There appears to be little doubt that the ancients had more or less knowledge of the existence of lakes in the centre of the continent of Africa. We find that Ptolemy, who lived and wrote in the second century, especially refers to them.

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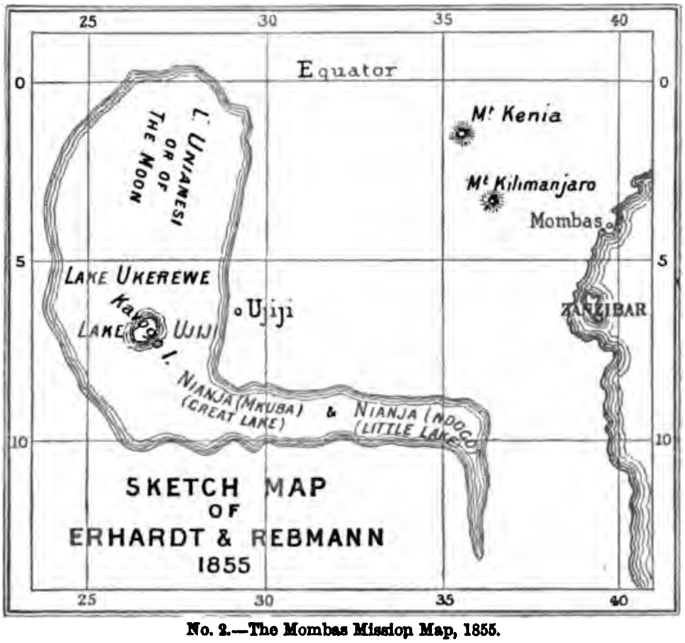
* The maps to illustrate this paper are kindly lent by the Editor of the *Primrose League Gazette* (see paper therein, June 28, 1890).

The geographical writers of the middle ages, and of the sixteenth, seventeenth, and eighteenth centuries, doubtless knew something of the lakes; and in the maps of each period, lakes, of varying size and shape, are to be found scattered over the continent in various positions.

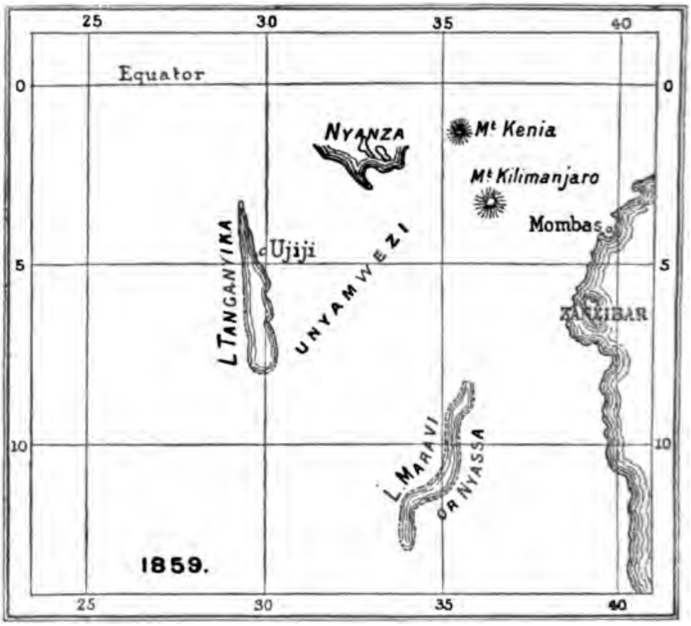
It is remarkable, that in the maps referred to, the physical features situated on the immediate coast-line are pretty accurately fixed, clearly showing them to have been laid down by men having considerable astronomical knowledge, such as we should expect to find among the navigators of those days. The physical features of the interior, shown in the same maps, we find, however, anything but correctly shaped or fixed, when viewed in the light of our own more exact knowledge of to-day. This shows clearly that they were known to the map makers of the time merely by report. Arab, native, and Portuguese half-caste traders, travelling to the interior, would, we can well understand, know of lakes, rivers, and mountains, which they would see and traverse in their journeys. They would, however, be quite incapable of accurately fixing their latitude and longitude, or correctly delineating their size and shape.



No. 2.—The Mombas Mission Map, 1855.

Each succeeding chartographer seems to have altered the positions, or altogether discarded, the lakes, rivers, and mountains which he found shown on the maps of his predecessors, until by degrees the whole centre of the continent of Africa gradually assumed an almost empty and barren appearance on the map. This was the condition of things during the first half of this century; and so late as the year 1849 we find a map published, which, with the exception of one reputed lake, "Maravi," shows the whole of Central Africa, from several degrees north of the equator to about fifteen degrees to the south, practically blank, and marked "unexplored territory," as indicated in map No. 1. The one lake shown in dotted lines, lake Maravi, had been more or less known by repute since the days of Pigafetta, a voyager and traveller who lived in the sixteenth century. No authentic information existed of its having been visited by any European; its size, shape, and importance were quite unknown; and doubts were even expressed as to whether it had any existence at all beyond being shown in the maps of the period.

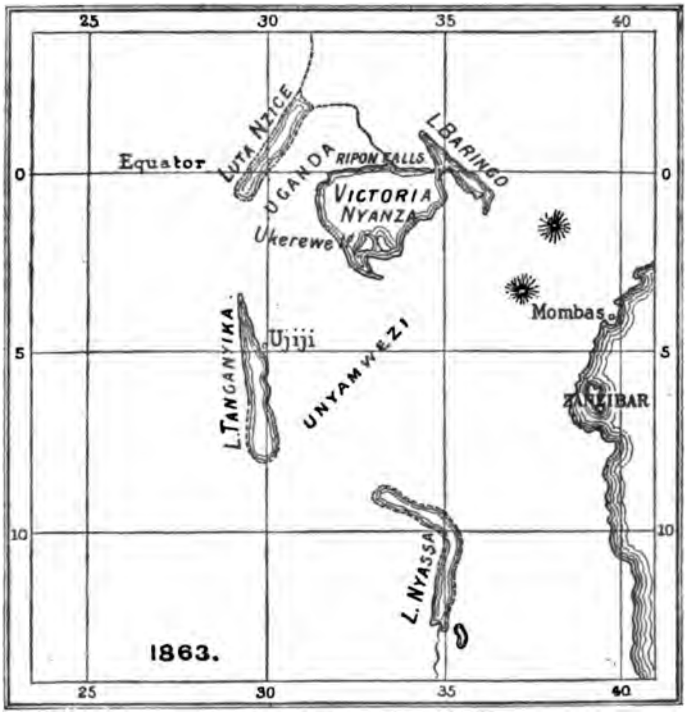
Such was the state of knowledge when, early in the fifties, an acquaintance with the interior of the continent in the vicinity of Mombas, on the east coast, began to be made known by the missionaries, Messrs. Krapf, Rebmann, and Erhardt, who had there settled. These gentlemen penetrated some distance inland, discovered the snow-capped mountains Kilimanjaro and Kenia, and accumulated much other important information. In the year 1855 Messrs. Erhardt and Rebmann sent home to Europe a rough sketch map (see map No. 2), drawn from information obtained from the native and Arab travellers, showing an enormous lake covering many degrees of both latitude and longitude. The lake, as sketched, not only covered an immense area of country, but was known in different districts by different names. Thus we find, at the extreme north, it is called Lake Uniamesi, or of the moon; in the neighbourhood of the fifth parallel of latitude Lake Ukerewe; a little further south Lake Ujiji; further south still, Nianja Mkuba (great lake); and at the extreme south, Nianja Ndogo (little lake). The most southern end of the reputed lake, it will be seen, was placed approximately in the neighbourhood of the supposed Maravi lake.



No. 3.—Burton and Speke's Map of Tanganyika and the Nyanza, 1859.

The publication of the map and the reports of the Mombas missionaries was followed by the despatch of an expedition, to Central Africa, for the purpose of exploration, under the auspices of the Royal Geographical Society, who decided to make a practical effort to obtain a knowledge of the geography of the interior.

This expedition was led by Capt. R. F. Burton, of the Indian Army, a traveller who had already won renown by successfully penetrating difficult and dangerous countries. Capt. Burton was accompanied by Lieut. Speke, also of the Indian Army who had been associated with him in a previous African expedition. Burton and Speke penetrated the interior from a point opposite the island of Zanzibar. Turning their backs on the coast, early in the year 1857, they travelled westward, and after many difficulties, of various kinds, were rewarded by the discovery of Lake Tanganyika on February 13th, 1858. The travellers struck this lake in the neighbourhood of the now well-known Arab settlement Ujiji. They explored a portion of the northern half of the lake and then turned their steps homewards. From the Arabs settled in the interior they learned that the huge lake, shown in the map of the Mombas missionaries, was a confusion of at least three lakes, viz., the Tanganyika, or Sea of Ujiji, which they visited; another lake to the north, known to the Arabs as the Ukerewe lake; and another to the south, which they supposed to be identical with the reputed Maravi.



No. 4.—Speke and Grant's Map of Lake Victoria, and Luta Nzige, 1863.

On their homeward journey, Speke, with the consent of Burton, made a flying visit to the northward, in the hope of obtaining a view of Lake Ukerewe. On July 9th, 1858, he was rewarded by the discovery of a large lake, known to the natives as the Nyanza, and to which Speke gave the name of Victoria. Speke found that a large island in the lake bore the native name of Ukerewe, and it was doubtless from this that the Arabs knew the lake by that name.

Map No. 3 shows the advance of knowledge up to the year 1859, when the expedition of Burton and Speke reached the coast on their return.

Speke claimed that the lake (Victoria) which he had discovered, was of immense area; but Burton did not attach very much importance to his companion's discovery, and in his official map showed only that portion of the lake actually viewed by Speke.

In 1859 Dr. Livingstone discovered the south end of Lake Nyassa, or Maravi, and that lake then took the form shown in map No. 4.

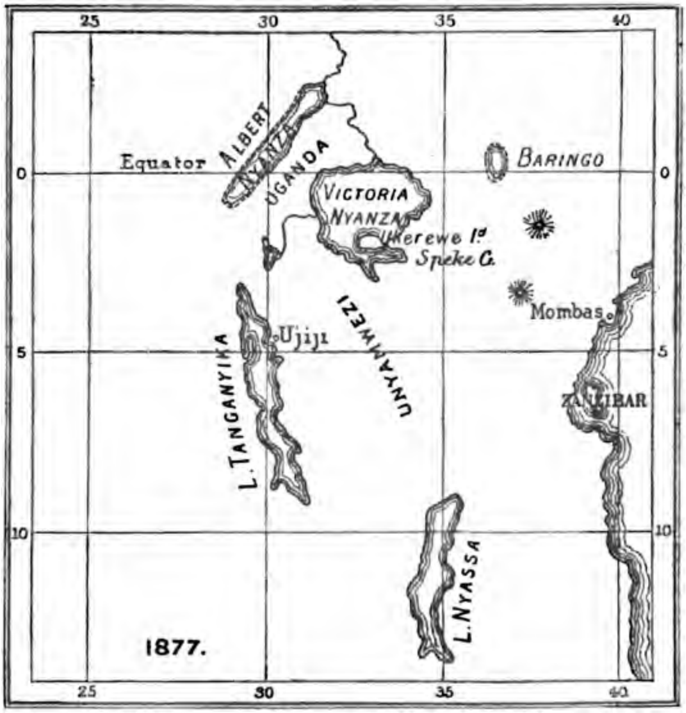
In the year 1860 Speke again set sail for Africa, as chief of an expedition proposing to learn more of Lake Victoria. He was accompanied by Captain Grant. Together they visited the north end of the Nyanza, and, partly from their own observation and partly from native report, the travellers gave the lake the shape and position shown in map No. 4. From native report, also, they were able to fix the approximate position of another lake to the west of the Victoria Nyanza, and known to the people of the country as Luta Nzige. The travellers emerged from the darkness of Africa in 1863, after three years' wanderings.

At Gondokoro, on the Upper Nile, Speke and Grant were met by Mr. and Mrs. Baker (now Sir Samuel and Lady Baker), who had come partly in search of the long-lost travellers, and partly bent on geographical discovery themselves. On hearing from Speke and Grant of the reputed lake, Luta Nzige, which they had been obliged to leave, Baker determined to take up the search, and, if possible, win the laurels which would reward its discoverer. Sir Samuel, and his heroic wife, bravely set their faces southward, and, after months of terrible suffering and hardship, were rewarded by a sight of the Luta Nzige, to which they gave the name of Albert Nyanza. They struck the lake on its eastern shore, at a place named Vacovia. The lake was not completely surveyed by Baker, only a portion of its eastern shore being followed, but, from his own observation and from native hearsay, he sketched the lake in his map, much as shown in map No. 5. Lake Nyassa took its shape, as shown in map No. 5, after Livingstone's visit to its shores while on his last journey, commenced in 1866, and its complete survey by Lieutenant Young on his Livingstone search expedition. It will be noted that Tanganyika also takes a new form in map No. 5. The northern half of the lake had been jointly surveyed by Livingstone and Stanley in 1871, and Lieutenant Cameron had, at a later date, devoted his attention to its southern half. Stanley also, in 1876, sailed round its southern half, completing his own survey of 1871, he being the only man who has completely circumnavigated its waters.

During the ten years that had elapsed, since the visit of Speke and Grant to the north of Lake Victoria in 1863 to the death of Dr. Livingstone in 1873, many varying and conflicting opinions had been expressed as to the importance and actual extent of the Victoria Nyanza. Burton was still unconvinced of the value of his quondam companion's discovery, and expressed his belief that the waters seen by Speke at the south end of the lake in 1858 were, probably, altogether distinct from the waters seen by Speke and Grant some years later in Uganda. In support of this view was the fact that Speke's observations gave considerable difference in the levels of the two waters seen by him, and Dr. Livingstone had reported, from Arab and native information, that several lakes actually existed where Speke's huge lake was supposed to reign supreme.

Stanley's visit to Africa in 1874 was undertaken in large measure to clear up this difficulty and uncertainty.

He was enabled to sail completely round Lake Victoria, surveying its shores as he voyaged. Stanley's survey proved that the Victoria was, as Speke had claimed, one large lake, and of the form shown in map No. 5. He found, however, that Speke had been mistaken in supposing that the Baringo Lake was connected to the Victoria Nyanza, as shown in that traveller's map. After completing his survey of the Victoria, Stanley travelled westward, with the intention of circumnavigating, in the same manner, the Albert Nyanza of Baker. He was unable, owing to the difficulties by which he was beset, to carry out this intention; but, he did reach a lake, lying on the equator, known to the natives as Muta Nzige, and which he, at the time, believed to be the Albert Lake, and to a portion of which he gave the name of Beatrice Gulf. The sighting of this water by Stanley, in 1876, is perhaps one of the most interesting incidents in African discovery which this century has witnessed. It was not until the great traveller had returned to Europe, and his observations had been worked out and compared with the observations of other travellers, that he suspected that the waters he had viewed were distinct from those discovered by Baker, further to the north, in 1864. At the time of Stanley's visit in 1876 the maps still showed the waters of the Albert Nyanza stretching a long way to the southward in the



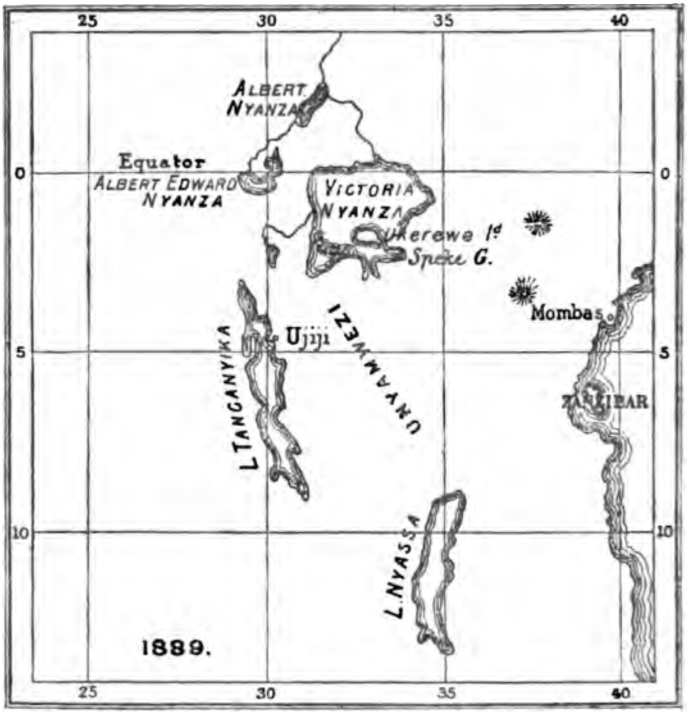
No. 5.—Stanley's Map, after his first crossing of the continent, 1877.

neighbourhood where Stanley had visited. Moreover, the Albert Nyanza of Baker bore the native name of Luta Nzige, while the lake seen by Stanley was known to the natives as Muta Nzige, names sufficiently alike in themselves to suggest the identity of the two waters.

While Stanley had been engaged in his researches from 1874 to 1877, the expedition of the late General (then Colonel) Gordon had reached the neighbourhood of the Albert Lake, and his lieutenants, Gessi, Long, and Mason had voyaged upon its waters. Their observations showed the lake of Baker to be considerably shorter than had previously been supposed, and on comparison it was found that no gulf answering the description of Stanley's Beatrice Gulf had been seen; besides which the latitude of Beatrice Gulf, as fixed by Stanley, placed it at a considerable distance to the south of the extreme south end of the Albert Lake. Nothing further was known of Stanley's new lake from 1877 to 1889, and for these twelve years it was shown in the maps with a doubtful and dotted outline, and known as Muta Nzige.

On returning with his expedition for the relief of Emin Pasha, Stanley found himself again in the vicinity of Beatrice Gulf, and his observations now show that Muta Nzige is undoubtedly a distinct lake. Stanley has named it Albert Edward Nyanza, and it takes the form shown upon map No. 6.

When Stanley's recent expedition reached the south-west corner of the Victoria Nyanza, it was found that the lake had an extension at this point which had not previously been observed. The extension alters the form of Lake Victoria, from that shown in map No. 5, to that in map No. 6. This bay-like addition to the lake is about six thousand square miles in extent, *i.e.*, about equal in area to the county of Yorkshire, and brings up the total area of the lake to twenty-six thousand nine hundred square miles. Stanley has been taken to task, by some writers, with regard to the discovery of this bay, or extension of the Victoria. It is asked, how was it that he missed such a huge bay, in his circumnavigation of the lake in 1875? To any one, however, who has carefully read his "Through the Dark Continent" the reason is plain. It was in the neighbourhood of the newly-found bay, that Stanley's boat was seized, and its oars confiscated by some warlike island people, from whom he only narrowly escaped. He was therefore unable to hug the shore so closely, as he had done at other places, and the entrance to the bay being filled with large overlapping islands, he was naturally easily deceived as to the actual shore line. The most remarkable fact is, that, after fourteen years, it should still remain for Stanley himself to discover the



No. 6.—Map to represent the region in 1890.

existence of the bay he had overlooked in 1875, notwithstanding the fact that numbers of other travellers had voyaged on the lake and visited the district in the meanwhile.

To a large gulf, at the south-east corner of Lake Victoria, Stanley, on his survey, gave the name of Speke Gulf, in honour of the discoverer of Africa's noblest water. Would it not be appropriate to call the new-found extension Stanley Bay, and so perpetuate, on the great lake, the name of one who has done so much to make known the geography of its vast expanse?

Map No. 6 shows roughly the present condition of our knowledge with regard to the large lakes of Eastern Central Africa. In forty years the enormous blank upon the 1849 map has been filled up and made a living reality, and since 1855 the huge lake of the Mombas missionaries has been split up into many, which in turn have been proved to be connected to no less than three of Africa's largest rivers. The triple Nyanzas contribute their surplus waters to the historic Nile in the north, the Tanganyika helps to swell the torrent of the gigantic Congo to the west, while the Nyassa augments the stream of the picturesque Zambezi on the east.

Making an Island Among the Mountains.—In the south-east corner of British Columbia the Canadian Pacific Railroad Company has, by means of a canal, united two rivers and formed a large island in the rocky heart of the country. This is in the Kootenay district, so-called from the tribe of Indians that inhabit the region. All but a mere strip of this water-encircled land is edged by the Columbia and Kootenay rivers, the latter a tributary of the former. The Columbia rises east of the Purcell range, a belt of mountains parallel with the Rockies and a little west of them, flows north-west to a point half-way between the Canadian Pacific Railway and Yellow Head Pass, is turned sharply southward by the Columbia Mountains on the west and the Selkirks on the east, and through the confined valley between the two flows for 70 or 80 miles until it reaches the expansion known as the Arrow Lakes, which are about 60 miles long and but three or four in breadth; a little below this point it receives the waters of the Kootenay river, and gathering force from other affluents goes down to the Pacific in state. The Kootenay has an equally tortuous course. Rising at the western foot of the main range of the Rockies, it flows southward within a few miles of the valley through which the Columbia is flowing northward; passes the head of that river, dips into Montana and Idaho in a long, sharp sweep, that is remarkably like the one described by the larger stream in the other direction; has its widening, also, in Kootenay Lake, which is long and narrow and lies between the Purcell and the Selkirk ranges, and thence in a short branch joins the Columbia. Last year the directors of the Canadian Pacific Railroad had a canal cut through the slight strip that separated the headwaters of the two streams, and the insulation of the region was complete. A man with a canoe could probably go entirely around it by water, barring a few places where rapids or falls would render the passage perilous. The existence of so large an island—about 280 by 120 miles—is the more surprising because of the high and rugged character of the country, the entire surface being broken into huge mountain masses, that in the case of the Selkirks are capped with eternal ice and snow, and are streaked with monster glaciers. The presence of these river routes has been known for a long time, but the surveys in that quarter were few and unimportant until within a half dozen years, and they have now assumed consequence as probable factors in the future development of British Columbia, for the western part of the island has been found to contain good grazing, timber in plenty among the mountains, fish and game are abundant, and near the lakes named above quantities of silver-bearing rock have been discovered, and claims will be staked in large numbers during the coming years. One of the mines on Kootenay Lake, it is said, will pay for working by reason of its richness in lead alone. Small steamers have recently been constructed to navigate the upper Columbia, and there are several boats on the lakes already, passengers leaving for this district at Revelstoke on the Canadian Pacific Railroad. There is talk also of railway extension into this section, and the Canadian Pacific is said to be seeking a more direct route from Medicine Hat to Vancouver that will traverse a greater breadth of this island than it now crosses.

STONE MONUMENTS IN NORTH-WESTERN IOWA AND SOUTH-WESTERN MINNESOTA.

BY T. H. LEWIS.

[Read to the Members, in the Library, Tuesday, July 22nd, 1890.]

IN a paper read before the Anthropological Society of Washington, February 5th, 1889, I described interesting specimens of certain "stone monuments," which, from the nature of their material and mode of construction, may be termed boulder outline figures. Last summer, having occasion to visit the valley of the Big Sioux river and the Coteau des Prairies, to the east of it, I met with a number of these interesting remains of prehistoric times and made full notes of them, of which the following is a concise account:—

THE BIG SIOUX LOCALITY.

In Lyon county, Iowa, about one and a half mile west of Granite Station, on the north side of the Sioux Falls Branch of the Burlington, Cedar Rapids and Northern Railroad, there is a plateau on which there is a large group of mounds, which I surveyed on July 29th and 30th, 1889. Scattered among these mounds, principally near the centre of the group, are many boulder outlines, representing circles and ellipses.

One circle, 34 feet in diameter, has no opening, and the boulders, 111 in number, are laid close together. A portion of the line passes over the base of a mound. Less than 100 feet distant there is another circle, 30 feet in diameter and composed of 67 boulders. There is a small opening on one side about one foot in width, the boulders marking each side of the opening being much larger than any of the others forming the circle. The base of one of the mounds, which is 60 feet in diameter and 5½ feet high, is surrounded by a circle of small boulders, 134 in number, without opening. An elliptical outline, consisting of 167 boulders, is 124 feet in length and 36 feet in width. Near by is another of still larger dimensions, but somewhat irregular in outline.

Some circles join others, in which case at the point where they unite there is but one line of boulders, which completes both circles. At one place there is a group of seven contiguous circles, all of which are connected in this manner. Among the works is a double circle formed by two series of boulders, or one circle within another, both series being close together. Many of the circles are formed of boulders weighing from 25 to 60 pounds each, and occasionally there is one that will weigh 100 pounds or more. There are also several circles of small stones, which range from less than two feet to six feet in diameter. In all instances the boulders are imbedded to a greater or less degree in the soil, some being not more than half exposed, while only the tops of others are visible above the surface.

Just south of the railroad track, and opposite the monuments described, there is a large inclosure or fort of mound-builders' times, with low walls, the surface of which within shows every evidence of former occupancy; but strange to relate, there is no evidence of boulder circles there. There were some circles outside, but none inside the fort. North of the railroad, less than one mile from the preceding locality, near the edge of a high plateau, there was formerly another group of boulder outlines, many of which have been destroyed. Noticing a few boulders protruding above the surface, and forming the segment of a circle, I procured a pick and shovel and made an investigation, in order to ascertain if the remainder of the boulders could not be accounted for, and the search was not fruitless. I found that about three-quarters of the boulders, which formed a circle 33 feet in diameter, had sunk beneath the surface or had been covered up by the soil, the depth of which above them varied from one to eight inches.

THE COTEAU DES PRAIRIES LOCALITY.

In the western part of Murray county, Minnesota, there is a series of conspicuous hills, knolls, and ridges, which are irregularly grouped, and the highest point of which rises some 200 feet above the lowest surrounding valleys. That portion of these elevations lying south of the Pipestone branch of the C., St. P., M. & O. R. R. was known to the Indians as Buffalo Ridge, and it still retains the name. The top of this ridge is some two miles in length, running in a general course from north-west to south-east through sections 16 and 21 of township 106, range 43, and finally terminating on all sides in lower spurs and terraces, the base of the whole ridge covering perhaps three square miles.

On the highest knoll there is a series of boulder outlines, mostly formed of small stones. The best preserved of these figures apparently represents a buffalo. It heads to the north-east, and its greatest length is nearly twelve feet. The horns are nicely rounded, and one of them is formed by a double row of stones. Between the outlines of the head there is a large boulder, about two-thirds of which is exposed, and which fills out the head, making it practically solid. Between the outlines of the body there were formerly one large and two smaller boulders which filled the space. The beds of matrices in which they had lain were plainly visible when I made the survey, on August 15th, 1889. These three stones had been removed by some of the settlers, probably for building purposes. This figure can scarcely be called an "effigy," but it is so nearly like one that it may be considered a connecting link between the effigy mounds proper and the boulder outlines; yet there is such a radical difference between the two extremes that a separate classification is a necessity; for while the first represents one half of an animate object in bas-relief, as it were, and is built solidly of earth, the other is a mere outline formed of stones or boulders.

But a few feet distant from the ends of the buffalo's legs there are two lines (trails) of small stones 2½ feet asunder, and running toward what has apparently been a stone heap or cairn, which is partially demolished. On the same knoll are parts of three other animals, which, judging from the traces still existing, represented different kinds, the outline of no two being exactly alike. There were two other trails, each with double lines, one being formed with small stones and the other by boulders weighing from four to ten pounds each. There were also several small circles from one to six feet in diameter, in a good state of preservation, while others that had been partially demolished could still be traced. One of the undisturbed ones was located a short distance north-east of the Buffalo, on the slope of the knoll. It was two feet in diameter, inside measurement, and had an opening five inches in width. The largest stone among those forming this circle was 1½in. in diameter, while nearly all the others were still smaller. All the stones and boulders forming the figures on this knoll were more or less imbedded in the soil, showing that they were not placed there very recently.

Toward the south-east, at the base of the ridge, about one mile distant, I discovered some new forms in boulder work, which may be called "pavements." These are not large, being only from two to five feet in diameter and composed of boulders weighing from four to eight pounds. Nearly all of these figures are round, but a few are square, or nearly so, while occasionally there is one that is irregular in outline.

The top surface is as nearly even as it is possible to make such work. In each pavement the boulders are of one size, or nearly so, and they are well bedded in the ground. There are also a few small circles and crescents, generally formed by small stones, and a few boulder trails. These different figures are scattered here and there, scarcely more than three or four being found together.

FORMER NOTICES AND CRITICAL REMARKS.

In the paper referred to, which was printed in the *American Anthropologist*, for April, 1889, I overlooked the fact that the explorer, J. N. Nicollet, who visited southern Minnesota in 1838, made particular mention of such boulder work in his report, printed in 1845.* The first reference is on page 12, as follows:—

"One mile from the Traverse des Sioux, and on the bank of the river, are the remains of an Indian camp, the circular area of which is still indicated by the heaps of stones around each lodge. As this indicates the existence of a custom no longer in use among the Ndakotahs, or Sioux, who have occupied the country for a long time back, it is difficult to assign the true origin of this relic. The Sissitons, the fourth tribe of the Ndakotahs, on whose lands these relics are found, have no tradition of them."

Two pages further on, speaking of the evidence to be found of the "erratic deposit," in the shape of fragments of primitive and transition rocks scattered over the Coteau, he says:—

"The Sioux take advantage of these loose materials to erect signals on the most elevated spots, or to designate the place by some conical structure, where some exhausted hunter has died on the prairies, and desires to be buried in a more prominent situation; or they amuse themselves in shaping them into fantastic figures. They give names to these localities, which thus serve as landmarks in a country where there are no other geographical beacons."

Again, on the same page, having described a *wi-wi*, or swamp, situated somewhere between the heads of the *tchan na tam-be*, or hidden wood, and Okshida creeks, he uses the following words:—

"Lastly, by way of illustration to what I have said above of the usages of the Sioux, I may add that, on the western side of the aforesaid *wi-wi*, and on the most elevated crest of the Coteau, there is a great accumulation of the materials belonging to the erratic deposit, of which they have availed themselves to construct the effigy of a man, so that the spot is called *tuyan-witchashta-karapi*—in English, the place where has been built up a man of stone."

On his large map, published in 1842, this particular figure appears marked in the locality described, and is designated "Stone Man." Nicollet does not say that he saw it himself, and his map shows no track to it, but indicates a route passing more directly westward from Shetek Lake by the Great Oasis, now Bear Lakes, to the Red Pipestone Quarry. He must have been a little too hasty in forming his opinion when he so readily considered "boulder outlines" to be the work of Sioux Indians, especially as it may be seen that he held the stone circles at Traverse des Sioux to be much more ancient than the Sioux occupancy of that country.

George Catlin, the painter, had previously visited the Quarry, in 1836, and he apparently saw this effigy on his return thence eastward; for in his "letter" he declares his intention of seeing the "Stone Man medicine," but there is no further reference to it in the book. It may remarked here that the name he calls it by does not favour the idea that the Sioux gave him to understand that their people had made this monument.

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* Report intended to illustrate a map of the hydrographic basin of the Upper Mississippi River made by J. N. Nicollet, January 11th, 1845 Washington, 1845.

Now, it was this Stone Man that I was most anxious to find last August, but the search was unsuccessful. The probabilities are that it, or rather the boulders composing it, has been carried off by settlers of the neighbourhood, wherever that was. There is no doubt that it was in existence until within a comparatively recent date; for a reliable man, a Mr. Casey, who was connected with the U.S. mail service, told me that he had seen it, and that it was situated somewhere on Buffalo Ridge, near the Buffalo.*

There can be no doubt that the Indians used boulders and stones to hold down the edges of their tents or tepees; and it may be further added that the whites have used boulders for the same purpose. But the remains of the old Indian camps are not to be taken into consideration in this connection for the following reason: While boulders have thus undoubtedly been utilised by the Indians, and while they may have formed, in cases, almost a perfect circle when in use, yet on the removal of the tent they would naturally be pushed or thrown to one side, thus destroying the symmetry of the circle. I have seen many Indian camping places where boulders have been used, but have failed to note a single instance where a regular circle of stones has been left on their abandonment. If the tepee theory be admitted in explanation of the larger circles, how explain the very small ones, in which even a *papoose* would find it difficult to stretch himself at full length?

There is yet need of a great deal of light on the subject of boulder outlines.

Yorkshire: Its Scenes, Lore, and Legends. By M. Tait. Maps by Mr. F. D. King. Leeds: A. J. Arnold. Price 2s. 6d.—This is a small guide to Yorkshire with nine maps, forming an atlas of the county. The text is interesting, and would be better if it was extended a little. The maps are capital. The book is a very good example of local geographical work by those who have a heart in it. We should be very glad to see similar books for Lancashire and Cheshire. It is modestly written. The members who take an interest in Yorkshire will be very glad to be introduced to a little unpretentious but capital book.

Trade on the Great Lakes of America.—It is astonishing how large an amount of traffic is carried on by these waterways. During the 234 days the Detroit river was open to navigation last year, the quantity of goods which passed along it was 10,000,000 tons more than the entries and clearances of all the seaports of the United States, and three million tons more than the combined foreign and coasting trade of the ports of London and Liverpool. This does not include the traffic between the lakes Superior and Michigan, or between Erie and Ontario, or the local traffic on these lakes. Nearly three times as many boats pass through the Sault Ste. Marie as through the Suez Canal, and it must be remembered that the latter is open to navigation all the year round. The tonnage in 1889 was 7,221,935, as against 6,783,189 for the Suez Canal. The figures relating to shipbuilding are equally surprising. In 1889 the tonnage of vessels constructed on the lakes was nearly exactly the same as of the vessels launched in all the dockyards on the coasts of the Atlantic, Pacific, and Gulf of Mexico. Of the whole steam tonnage of the United States about one-third is on the lakes. There were in the same year 21 sailing vessels of between 1,000 and 2,500 tons each, and 156 between 500 and 1,000 tons. The growth of shipbuilding has been very marked within the ast few years.—*Scottish Geographical Magazine, December, 1890.*

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* In the winter of 1854-55 a young man by the name of Northrop, who had lived in the tents of the Dakotas, more or less, told a friend of mine (Mr. A. J. H.) about a stone work he had seen on the western prairies, which was shaped like a man. This was most probably the Stone Man of Catlin, Nicollet, and Mr. Casey.

NOTES ON THE ARMENIANS IN ASIA MINOR.

(Communicated by Mr. J. THEODORE BENT, F.R.G.S., and read to the Members in the Library, July 22, 1890.)

IT would appear that an almost unbroken line of indigenous Armenians extends from the shores of the Mediterranean to the Caucasus, beginning with the Cilician plain, with large Armenian populations settled at Tarsus, Adana, Sis, and the adjacent villages. This southern branch of the Armenian race represents all that is left of the kingdom of Lower Armenia, ruled over by the Reubenian dynasty till the close of the fourteenth century. For the most part this remnant of the race is thoroughly denationalised, rarely, and only in the inmost recesses of the family, speaking the Armenian tongue.

Sis represents the centre of this southern branch of the Armenian family. Here is the monastery where the patriarch professes to carry on the inheritance of the kings, and, broadly speaking, all Armenians south of the Taurus recognise him as their head. With the hand of St. Gregory the Illuminator he travels about from town to town collecting alms, and he has lately succeeded in persuading the Porte to recognise his claims as against those of the patriarch or Katholicos of Etchmiagin to be considered as the head of the Armenian race, by stating that he and his flock are loyal subjects of the Porte, whilst the Armenians under Etchmiagin are now aliens.

But in the diocese itself the condition of affairs is lamentable in the extreme Beyond an orphanage, maintained at the expense of the patriarch, at Sis, but little is done for education from the Armenian side ; and those who wish to bring up their children well invariably send them to be educated by Armenian missionaries at Adana or Marash. Hence the seeds of disunion are sown broadcast amongst the Armenians of the south. There are Protestant Armenians converts of the Armenian Boards, Roman Catholic Armenians who look to the college on the island of St. Lazaro, near Venice, as their central head, and Armenians of the old faith steeped in superstition, over whom the Katholicos of Sis at present holds an uncertain sway.

The present Katholicos Mugurditch is most unpopular in his own diocese, so much so that he dare not reside at Sis at all, but generally lives at Marash, in the mountains, coming only to Sis for the great Armenian ceremony of the Blessing of the Holy Oil, which at one time used to bring in a steady revenue to the patriarchate, but now, owing to the dissensions amongst them, it has considerably fallen off. The monastic buildings are rapidly falling into decay ; the illiterate priesthood are looked upon with contempt ; and the three divisions into which the Christian Armenians have divided themselves are for ever at variance, and preclude any hope of a concerted action on the part of the Armenians of this district.

The aspect of affairs is very different amongst the mountainous Armenians who inhabit the towns and villages of the Taurus north of the Cilician plain. Hadgin is a great Armenian centre. Here the language is openly spoken, old Armenian customs are maintained, the people are strong and active, accustomed to violent exercise, and the old horseback games are played amongst them with great vigour. They are the descendants of the warriors who fought under the kings of the Reubenian line, who, after the overthrow of the dynasty, retired to the mountains, and have maintained there a sort of semi-independence ever since.

Zeitoun, still further away in the mountains, is a still more marked instance of the maintenance of public spirit amongst the Armenians. Not many years ago a leading Armenian of Zeitoun, named Babig, maintained for long a successful warfare against the Turks, and if there had been more unity of purpose amongst the rest of the Armenians he might easily have succeeded in either throwing off the Turkish yoke altogether or, at all events, in obtaining for his race terms which would have freed them from the present state of oppression in which they live.

North of Zeitoun the Armenians all recognise the supremacy of the Patriarchate of Etchmiagin. It is one of the most striking instances of Mohammedan misrule to cross over the frontier, either from the side of Persia or the side of Turkey, near Mount Ararat, and witness the difference between the Armenian subjects of the Sultan or the Shah and those under the dominion of the Czar. In Turkey and Persia the Armenians are suppressed and denationalised at every turn, whereas the Armenians of Transcaucasia are an exceedingly prosperous and progressive race. In such towns as Naghichevan and Erivan the free scope given to their commercial tendencies has resulted in the production of many well-to-do families and considerable wealth, and no greater contrast can be afforded than between the misery and squalor of the Patriarchate of Sis and the flourishing condition of the Patriarchate of Etchmiagin. The Katholicos of this latter place is a sort of vassal king under the Czar, living in his own palace, and surrounded by a monastic establishment at once prosperous and rich. Here there is a large college maintained for the education of Armenians, leaving nothing to be desired both on the points of cleanliness and work done. Of course the answer to this, given by Russophobists, is that Russia pampers her frontier subjects with a view to paving the way for future conquests, and that if the whole of Armenia came under her rule this happy state of affairs would soon cease to exist. But at present the condition of affairs is this: misery and degradation for the Armenians of Persia and Turkey; prosperity and peace for those under Russian rule.

Another interesting Armenian colony is to be found in and around the Persian town of Ispahan. Shah Abbas bodily removed the inhabitants of the Armenian town of Yulfa, on the Araxis, and settled them in the suburbs of Ispahan, in a town which they built and called Yulfa. For upwards of a century this colony, under the favouring wing of the Suffi dynasty, progressed in wealth and power. They built fine churches and houses, and by their commercial enterprise contributed much to the development of the Persian capital of the day. In the seventeenth century, however, Shah Ismael, when invaded by the Afghans, sacrificed the wealthy Armenians to save himself, and since then Yulfa has always been the spot to which the impoverished rulers of Persia have turned to recoup their fortunes, until the Armenians of Yulfa have been drained almost to the last drop, and the prosperous colony of two centuries ago now represents the same appearance as the other decayed towns of Persia.

A few years ago the European consuls took the Armenians of Yulfa under their protection, and they now enjoy a fair amount of security for life and property; but the commercial enterprise is gone from them, and under the present order of things will probably not return. The Armenian villages in the mountains near Ispahan maintain intact more interesting traditions and customs than can be found in any other districts inhabited by their race.

The Ottoman Turks on their conquest of Asia Minor pursued the same policy as that which the Byzantine Emperors had followed, namely, of disintegrating and scattering the various nationalities which came under their rule. The result of this continuous policy of dismemberment is that we find Armenian villages and colonies scattered over the whole face of Asia Minor, in places where we should least expect them. These villages are mostly all Turkish speaking, but public notices and so forth are put up in Turkish and in Armenian characters. The priests, it is true, continue to go through the services in the old Armenian tongue, but none understand what they say, and very often the priests themselves are ignorant of the meaning of the words they utter.

From these remarks it will be apparent how difficult anything like concerted action will be amongst the Armenians. They are undoubtedly all very proud of their nationality and traditions, but scattered as they are and eaten up by internal jealousies, anything like the unity of purpose displayed by the Greeks at the commencement of this century appears at present almost an impossibility.

The following communication by one of our members is an Armenian view of Mr. Bent's paper, and may be of interest:—

The last paragraph but one is not correct, as it is incorrect to say that they do not understand what is said in old Armenian. The people are ignorant, and, there being no schools, are not taught the old Armenian, but all the services are understood, and they know the meaning of the services, although they may not know old Armenian. It is also incorrect to say that the priests do not understand a word they utter. In those parts most of the priests, unfortunately, are uneducated, but not to such an extent as to be made to understand the words of the service uttered by themselves.

I cannot quite agree with the author that there was and is not unity of purpose amongst the Armenians. If Babig gave up his warfare against the Turks, it was not because there was no unity of purpose, but because the British Government intervened, and I had it from the British Consul of Aleppo that through his direct intervention and the promises held out by the British Government, Babig was induced to lay down his arms, on the assurance of the English and the promise of the Turks to honestly carry out the conditions then arranged between Babig and the Turks through the British Consul, but which promise the Turks, as usual, violated, and had Babig stabbed during the confusion of a conflagration. I beg also to differ with the author when he says, despondingly, that, scattered and eaten up by internal jealousies as we are, there is no possibility of anything like unity of purpose. He is correct when he considers our scattered condition, and the Turkish method of improving upon the method of Byzantine empires in that respect, in which not a little of the blame belongs to European powers, but unity of purpose there is in the people, if only they had the chance of some little encouragement from outside. I question if the Greeks of the present are any better than us under the altered condition of things now existing. We owe most of our misfortunes to that so-called European Christendom as we have had it in the past.

The Trade of Burma.—The returns for the year ending March, 1890, are of a most satisfactory character. The value of the trade was by far the highest on record, the imports being worth about £161,500 more than in the previous year, and the exports £1,318,000 more. During the two years before the war the average value of the imports was £2,578,000; during the two transition years, £2,447,000; and for the last three years, £3,699,000. The exports during the same periods were £4,077,000, £4,592,000, and £4,702,000 respectively. The trade with Great Britain during the past year was of the value of £4,078,600. The chief imports were cotton goods, oils, provisions, ships, and parts of ships; and the exports were rice, raw cotton, and teak. The increase in the import trade was mainly due to large supplies of kerosene brought from the United States, but in almost every article trade is steadily advancing.—*The Scottish Geographical Magazine, Dec. 1890.*

NEW TRADE ROUTES INTO PERSIA.

BY MR. H. F. B. LYNCH.

(Read to the Members in the Library, Wednesday, October 8th, 1890.)

THIS paper has as its object an attempt to review the commercial geography of Southern Persia from the standpoint of the writer's experience during recent travels. A twofold consideration at once presents itself. First, what is the physical configuration of the country between the Persian Gulf and the Persian plateau? and secondly, how can we apply the results of such an inquiry to the benefit of commerce and of civilisation? Here an important element is introduced, for, given that geography has long ago decided that the present main trade route is about the worst possible, and further, that she has within recent years added much positive information regarding better roads, there still remain the important questions: May commerce enter by them? and if allowed to enter, will she be starved or fostered? This is the political element, and I will venture to offer a few remarks regarding it. The chief obstacles to the progress of commerce in Persia lie not only in the indifference of the Persian Government, but also in the apathy of the English people towards Persia and its politics. Is there any modern government, unsupported by public opinion, which would dare to pursue any policy towards any country with any continuity? Responsibility is the price of power, and your leisure is exercised by pressing problems in India and in Africa, in China and in Persia. If you neglect them, who will unravel them? After all, we have the largest interest in the foreign commerce of that power, which is no distant neighbour of ours in India; and further, the value to us of its political stability is such as to merit not our apathy but our zeal. Stretching from the eastern borders of Turkey to the frontiers of Afghanistan, and from the Transcaspian provinces of Russia to the Indian Ocean, Persia covers an area of 610,000 square miles—a territory five times as large as that comprised within the United Kingdom. Of this, the greater portion is mountain, or springless desert. Enough remains of arable, of habitable, and of salubrious districts to equal or exceed the area of our islands. The political importance to us of the development of Persia as an integral state is this: it would be onerous to hold it ourselves, it would be dangerous to let others hold it, it would be advantageous if it can progress—but progress it must—under its present rulers. When the Karun river—a great navigable waterway, and the only navigable river of Persia—was thrown open to commerce, under certain almost prohibitive restrictions, by His Majesty the Shah, in 1888, the prospect of improved intercourse with Persia was received with some interest by the English press. If certain restrictions could be removed, and if certain facilities were offered, it seemed likely that the new trade routes, the advantages of which our geographers had taken great pains to demonstrate, would descend from the province of theory to that of reality. This hope, in spite of the arduous labours of men well acquainted with the methods and habits of the East, has only been partially realised. While His Majesty the Shah was being feted by the merchants of London, I was a witness, as a traveller, of the scanty help, to say the least, which the Persian Government extended to the efforts of London merchants on the Karun. A mere declaration that a river may be navigated is not tantamount to opening it to commerce; nor is it within the power of individuals to persuade the Persian Government to take those measures, the necessity of which it is their duty to point out. In what manner the proper navigation of this river will affect commercial intercourse, it now becomes my object to describe.

The physical geography of Persia is a fascinating subject of study. Crossing the grain of a mighty range which stretches from Europe to India, the traveller arrives on a vast plateau, which, from an elevation of four to five thousand feet, sinks to the unexplored recesses of the great salt desert, and rises thence to the northern mountains and the valleys of Khorassan. Between the mountains, or where they border a wider stretch of plain, rivers or rills of glacier water spread rich fertility beneath a quickening sun. No rain falls in summer, but the altitudes are high, the atmosphere rare, and the climate is delicious in summer, and cold, but bright, in winter. The plateau itself, upon which you emerge from the parallel valleys and long ridges of the mountain range, is stony and sterile. Eastwards, its bleak and bare expanse stretches to the salt sands. Here and there a stream or river flows to the plain, and, soon exhausted, sinks. Along the banks of the precious water, by the verge of the tiny channels into which it has been diffused, a rich growth of brightly-green foliage starts with a fairy vigour and perfection. Luscious melons swell beneath the hot sun on the moist earth, and the red pomegranate or pale apple hangs from the branch, or clinging bends it beneath the deep shade. Such oases relieve and refresh the eye and sense, tired to weariness by the glare and heat and dust.

The largest cities and the central points of attraction to commerce by the Persian Gulf are situated on the plateau. Of these, Ispahan contains some 80,000, and Teheran some 200,000 inhabitants. The volume of the trade of central and southern Persia flows from and to the Persian Gulf, by mule or camel transport. From the Gulf there is cheap water carriage to India and to Europe. A portion passes by the Black Sea route, *viâ* Trebizond; while the rich province of Khorassan and the shores of the Caspian are enclosed within the widening zone of Russian commercial supremacy. Bushire stands at the entrance of the main avenue of the Gulf trade; thence a most difficult track leads over high and precipitous passes to Shiraz; from Shiraz the way is easier towards Ispahan and Teheran. The distances along this at present the principal road into Persia by the Gulf are, Shiraz 200 miles, Ispahan 520 miles, Teheran 800 miles; and the elevations between Bushire and Shiraz a pass of 7,250 feet, between Shiraz and Ispahan one of over 8,000 feet, between Ispahan and Teheran the Kohrud pass of 8,750 feet. The difficulties along this road are so great that bulky goods are taken by river to Bagdad, and thence, after passing the barriers of a Turkish custom house, reach the plateau by the easier route *viâ* Kerrind. A glance at the map will show the advantages which Shushter, at the head of the navigable portion of the Karun river, possesses over Bushire. Here you have a port distant by land some 130 miles from the Persian port of Mohammerah, to which ocean steamers have access. Shushter commands a series of routes to the more populous districts and cities of Persia. The chief among these are (1) From Shushter, *viâ* Khoremabad, Banyird, and Sultanabad, to Teheran, a distance of 480 miles, as against 800 miles between Teheran and Bushire. The elevations along this road are: For a distance of about 110 miles its profile rises from under 6,000 feet to passes over 7,000 feet high, the highest being that of Kushkedar, between Sultanabad and Banyird, 7,490 feet high. A group of European capitalists are engaged in constructing a cart road across this section. (2) From Shushter, *viâ* Malamir, to Ispahan, a distance of 250 miles by the road, which I have described in the current number of the Royal Geographical Society's Proceedings. The high altitudes along this road extend for a distance of about 80 miles, and the highest pass along it is 8,650 feet high. By these two roads the distance between Teheran and a port is reduced from 800 miles, *viâ* Bushire, to 480 miles, *viâ* Shushter, while Ispahan holds the benefit of 250 as against 520 miles. The first of these two routes from Shushter traverses a country which has been subject to the depredations of the Lur tribes, but the opening of the Karun river, and the revenues derived from increased traffic, will make it worth while for the Persian Government to insure its security. As to the second, it lies through the country of the friendly Bakhtiari, who are well within the authority of the Persian Government.

The mention of the Lur tribes, and of that widely-spread subdivision of them which bears the name of Bakhtiari, leads me to another aspect of the political factor which is so important an element in the consideration before us. The normal political condition of the nomad tribes, who wander over the Persian mountains from Kurdistan to Shiraz, has been that of a nominal allegiance to the Persian Government. The present Shah has done much to consolidate his power; the tributes are more regularly paid; and, at least, the chiefs of the Bakhtiari retain their positions at his will. The opening of the new trade routes, the extended use of tracks, the construction perhaps of roads, will further his general policy, and, what is more important, will present him with an opportunity of drawing the personnel of his army from a fine race of hardy mountaineers, whose allegiance he will, with improved communications, possess ample means to secure. I have said that along the direct road which leads from Shushter to the Persian plateau, and to Ispahan—a distance of 250 miles—there need be no apprehension for the safety of life and property; but this is a barren statement, and I would ask you to bear with me while I attempt rapidly to describe, under certain aspects, the life of the Bakhtiari clans and their princes, through whose territory the new trade route to Ispahan will pass.

Pardon me if I refer you to the map, which I have recently made, for the position of the valley of Char Kher, between Shushter and Ispahan. There, at an altitude of over 7,000 feet above the sea, are the summer quarters, the summer encampment, of the princes of the Bakhtiari. You have emerged from the parallel troughs, from the parallel ridges of oak-studded mountains; you are in a country of high uplands. The chains are more widely distant, the expanse is greater, the surface of the plains is darkened with recent tillage, and across this solid depth of colour you look to the amber lights and liquid shadows which the naked limestone walls reflect to the declining sun. Where the mountain forms tend to circle beyond the great plain or plateau of Ardell, a level valley lies, enclosed by lofty peaks and barren parapets. Many a fierce contest has raged within it, when the two rival clans of Haft Lang and Chahar Lang have fought for the supremacy of Greater Luristan. In its centre is built a little fort, a stronghold of the Haft Lang clan. Round it their black tents cluster, and among them the white canvas of the princes is from afar conspicuous. Their flocks, and herds, and droves, are pastured on the banks of little streams, or on the oozing borders of a marsh. What is their rank in civilisation? I may recall certain features without presuming to generalise. Let me commence by saying that the Mohammedan faith is accepted throughout these mountains, and that, at least, its forms and its language, which in themselves shed a simple beauty on life, have passed into the common mould of demeanour and expression. But the nature of religious professions is a slender test of enlightenment—it is more useful to inquire what resources of science they command, to what cultivation of mind and manner they have attained, and what are their notions of right and wrong. It is without the scope of my narrow limits to pursue with sufficiency this inquiry into the habits and customs of these nomad tribes. Their views, if pronounced, are at least primitive, and they are sufficiently virtuous to despise the perfidy of the Persians. Nowhere, perhaps, except among such mountains, is the spirit of feudalism as green and vigorous still as in our early centuries; nowhere else can you better examine, and perhaps admire more, the organisation of personal obedience based on personal respect. A form of feudalism which does not rest on any system of private land tenure, which obtains among a people who hold their pastures in common, or cultivate a strip of land where, when, or how they please, is unfamiliar to us. It is, no doubt, its simplest and earliest form; and he who can bring himself to acknowledge, even amid the political passions of our own environment, that with all reform comes loss as well as gain, will dwell with pleasure on a phase of life which only survives among ourselves in forms and ceremonies—just as in the body of some animals some bony excrescence serves to remind us of former functions, different, but no less real, which have been lost by long disuse.

The life of the princes themselves presents a striking picture of many-sided contrasts. Educated among the surroundings of the Persian courts, they have attained that perfection of manner and polished expression which is, perhaps, without a rival even in the annals of the French Monarchy. On none have I seen this courtliness of demeanour sit with greater grace than on these princes. By nature they are more refined than the ruling Kadyar dynasty—their expression is animated and their gestures free but sober. And yet an element of childishness underlies these polished manners. A new rifle is to them as a new toy, and with a fine recklessness they will roll over a dog or lame a pony, which grazes in the distance, to show you their unerring aim. Their firearms come from England, and are of the most modern pattern. A young chieftain at the head of his troops is as wild a warrior as you could wish to see. At the full gallop he fires to front or rear; his beautiful Arab mare extends or curbs herself to his will; yet when he has doffed his national dress and attired himself in a dark and braided suit—which is made on a London pattern, from cloth manufactured perhaps at Leeds—it would be hard to recognise in the quiet gentleman the daring freebooter of your morning's ride. Not unversed in the history of Europe, he will often surprise you by some well-reasoned reflection on historical incident. In the midst of enlightened conversation the thought arrests you, Is this the man who would kill his brothers without compunction or remorse? To the hard surroundings of a life in camp a sumptuous country house presents an antidote—it is beyond the confines of their own country, and their rude followers are perhaps ignorant of the luxuries which their masters leave them to enjoy. The palace itself presents a picture of no less various colouring. What a contrast between its rude frescoes and the portraits of English ladies, fresh from Bond Street, which adorn its walls! The aged doctor, in one apartment, strokes his long white beard over the precepts of a Galen and is ignorant of the virtues of quinine. In another they serve you a dinner *à la Français*, on Minton's porcelain. I shall not forget the evening when we halted before the blind walls of a large enclosure, at midnight, beneath the risen moon. It was indeed a surprise which our hosts, who were unable to accompany us, had designed for my companion and myself! Through a long and narrow passage, dimly lighted, we passed. We saw, or thought we saw, the forms of girls flitting before us from door to door, in wonder who we were. A large and open court displayed a voluptuous view to the noble rooms around it. How distant seemed the toils of our journey, the stones' glare and dust. The water bubbled in a large stone basin cut crosswise in the court, and at the angles rich beds of mauve and madder asters shed colour over it. On cushions of velvet, among the bending flowers which Persian art had shed over walls and ceiling, we slept. Such are the surroundings of mountain camp and gentle garden, from which I turn to my main theme, which I must now attempt to develop and to close.

It is now nearly two years since the Karun river has been declared open to navigation as far as Ahwaz, where there is a natural ledge of rocks across the stream. A continuous steam service has, after much negotiation, been organised, both above and below Ahwaz. Why is commerce still loth to enter, and avail itself of the new trade routes? This is an important question, which those who are interested in commercial geography will not hesitate to ask. How much of the trade of the great industrial town of Leeds, I wonder, depends on these eastern markets? Can Manchester look upon them with indifference? The commerce of Great Britain and India with Persia has been recently estimated by a careful writer at a value of £2,500,000 a year. That figure alone makes it seem worth while to attempt an answer to this question. The reasons may be briefly stated thus: (1) The collection of customs is still in a state of disorder. A settlement was arrived at nearly a year ago between the British and the Persian Governments, by which the customs are to be collected at Shushter, the port of terminus, but this important measure still remains unfulfilled. (2) A portal service on the Karun requires to be organised. This is a matter for our own Government, and its importance has been pointed out by experienced writers, such as Colonel Bell and Sir R. Murdoch Smith. These are the leading obstacles to commerce as far as Shushter. Unless they are removed it will never flow. Once it has penetrated to Shushter it will soon pass further. The development of the short track to Ispahan is well within the power of the Persian Government, and I hope they will see the wisdom of taking those steps in this direction which I have pointed out in detail in the paper to which I have before, with your pardon, alluded. The advantages which will accrue to Persia by the opening of the new trade routes will be enormous. The benefits to ourselves will not be insignificant. In the past our interest in Persia has been spasmodic. At times we have thought no expenditure too extravagant in supporting her—at others we have wrapped ourselves in a cold indifference to her fate. While we must recognise the many difficulties which beset our Government in their dealings with Persia—while no impartial spectator will refuse to admit that the cause of Persian progress has been furthered within recent years by their initiative—still the uneven history of the old era suggests an apprehension lest it may be repeated, and that the zeal of our statesmen will diminish as the complications they encounter increase.

Alaska's Long Coast Line.—Lieutenant-Commander Stockton, in his lecture before the National Geographic Society, Washington, on his remarkable cruise on the steamer Thetis, during the summer of 1889, along the northern coast of the American continent, to the Mackenzie river, calls attention to a fact which may surprise some readers. Alaska has an area of about 580,000 square miles, with a coast line 6,650 miles in length, and also including 1,100 islands with a coast line of 2,950 miles, the entire coast line being 9,600 miles long. The coast line of the rest of the United States, including islands, is only 6,580 miles. Thus the coast line of Alaska is 3,020 miles longer than the coast line of all the rest of the United States.—*Goldthwaite's Geographical Magazine, April, 1891.*

Winter Weather in May on the Plateaus of Tibet.—Capt. Grombchefsky has returned to St. Petersburg from his travels in Tibet. In the middle of May last he reached the Tibetan plateau, in the north-western part of that country, a little south of Polu. When he reached the surface of the plateau he was 16,000 feet above the sea. The season was not far enough advanced for travel at that elevation. The springs were all frozen and the snow unmelted. The abrupt change of climate from the warmth of Keria, only a few days' march further north, to the cold of Tibet, was exceedingly trying for men and beasts. A considerable tract, however, was visited and mapped. This corner of Tibet was found to bear a close resemblance to the extreme western portion visited the previous winter, consisting of the same sandy, saline wilderness, intersected by low ridges of hills, forming deep hollows filled with extensive lakes.—*Goldthwaite's Geographical Magazine, April, 1891.*

ON THE PRESENT STATE OF THE ORDNANCE SURVEY, AND THE PARAMOUNT NECESSITY FOR A THOROUGH REVISION.

By HENRY T. CROOK, C.E.

[Addressed to the Members, in the Library, October 8th, 1890.]

In his presidential address to this section at the Brighton meeting, eighteen years ago, Mr. Francis Galton dwelt on the comparative neglect and indifference which the public showed to the work of the Ordnance Survey.

In proportion to the area of which Government maps are procurable the demand for the maps at the present time, judged by the sales, has not increased. It would seem, therefore, that the productions of the Survey have become less instead of more popular since the time when Mr. Galton drew attention to the matter. In a scientific age, when the purposes for which accurate maps are required are ever increasing, the falling off in the sales of the national maps, for the making of which the country has paid an enormous sum of money, is, to say the least, a startling phenomenon. Nearly twenty years ago, estimating from the annual value of the maps sold at that time, General Sir Henry James thought that when the Survey was completed (which, in theory at all events, it is now supposed to be), the yield from sales would be at least £30,000 per annum, whereas for the year ending last December the value of sales only reaches the paltry amount of £13,164, whilst the value of presentations to public departments and Government institutions and under the provisions of the Copyright Act amounts to nearly £6,000. It would be difficult indeed to find a parallel for a work of equal magnitude and importance yielding such disappointing results. The partial failure of our great national cartographical institution to realise the legitimate expectations formed of it seems a proper subject of inquiry for the British Association, one of whose objects is the removal of disadvantages impeding the progress of science. There are only three ways in which this condition of things can be explained. They are :—

1. That even with the schoolmaster abroad the present generation requires fewer maps.
2. That the maps are not accessible, and therefore not known.
3. That the maps do not meet popular requirements.

The first explanation is obviously untenable ; there is a good deal to be said for the second ; but, after careful examination and inquiry, I have come to a decided conclusion that there is far more importance to be attached to the third. Speaking of the one-inch maps only, Mr. Galton said, "It is much to be regretted that these beautiful and cheap maps are not more accessible. They are rarely to be found even in the principal booksellers' shops of important country towns, and I have never observed one on the bookstall of a railway station. Many educated persons seldom, if ever, see them ; they are almost unknown to the middle and lower classes ; and thus an important work, made at the expense of the public, is practically unavailable to a large majority of those interested in it, who, when they want a local map, are driven to use a common and inferior one." This can be more truly said of the large-scale maps than of the one-inch, which is the only one at all popularly known, and, in fact, is often spoken of as *the* Ordnance map. The latter is by far the most important of the series to the bulk of the map-using public, and something more than the mere difficulty of obtaining it is required to account for its unpopularity.

We cannot arrive at a right conclusion as to what it is that stands in the way of the full and complete utilisation of the Ordnance Survey, unless we take into consideration its work as a whole. The Department has attempted or has been directed to undertake far more than it had the means to carry out in any reasonable time. The cadastral surveys have, during recent times especially, occupied the chief share of the Department's energies, to the exclusion or indefinite delay of the original and more popular work. It has almost abandoned cartography for land surveying—maps have given place to plans. No one, in these days, will dispute the advisability of carrying out the parent survey on the largest required scale, but, like most scientific undertakings, the survey has suffered severely from constant Parliamentary interference. The scope of the undertaking has been enlarged without a corresponding increase in the establishment and in the annual grant. Since the general lines upon which the work was to proceed were finally determined in 1863, the chief difficulty has been with the throttle-valve of the Treasury. The result is that after more than a century's existence the Department has not yet completed one of its works. Apart from mere skeleton or index maps, it has not yet produced on any scale a uniform map of the British Isles.

A generation has elapsed since the completion of the great triangulation, and yet of the original scheme, the one-inch hill-shaded map of the kingdom, there still remain to be completed 30 out of the 131 sheets of Scotland, and 25 out of the 205 comprised in Ireland. The six-inch map commenced in Ireland in 1825 is the nearest to completion; it is stated that it will be finished early next year. The $\frac{1}{2500}$ map, commonly known as the 25-inch, the true cadastral survey, was commenced in 1854. Considering the magnitude of the task it has so far been executed more rapidly than any, but still a great deal remains to be done. The important counties of Lancashire and Yorkshire, several counties in Scotland, and almost the whole of Ireland, excepting Dublin county, have still no maps on a larger scale than six inches to the mile. It has, in fact, only just been decided to re-survey Ireland on the 25-inch scale. In those districts where the one-inch map had not been published, the change, first to the six-inch and then to the 25-inch for the parent survey, necessarily delayed the publication of maps on the smaller scales until the introduction of the photographic and photozincographic methods of reduction and printing. Still one cannot fail to be struck by the phenomenal slowness of production which has characterised the work as a whole. In consequence of the length of time which it has taken, and the neglect to provide for a timely revision, the major portion of the maps are obsolete and of little more than historical interest.

No one who knows anything of the subject questions the original accuracy and finish of most of the maps which the Ordnance Office has produced, or of the valuable work which has been done in the advancement of geodetical and astronomical science. It is necessary to say this, for it has frequently been charged against those who have from time to time presumed to criticise the work of the Survey that they have been oblivious of these things. At present we are concerned merely with the question why the maps are so little utilised, and the reasons for the apparently low estimation in which they are held by the public. Stated in the probable order of their importance, I think the reasons may be tabulated thus:—

A. The maps fail in many cases to meet the requirements of the classes of users for which they are presumably designed, on account of—

(1) Age. For want of revision large portions of even the 25-inch, but more particularly the six-inch and one-inch maps, are very incorrect, and in many cases quite obsolete.

(2) Bad impressions or impressions from old or worn-out plates.

(3) Complexity (in the one-inch map) through overcrowding of detail, causing confusion, the map being printed in only one colour.

(4) Deficiency in information as to ground forms, particularly in the six-inch map (excepting Lancashire and Yorkshire).

(5) Want of uniformity.

(6) High price, especially in the case of the six-inch, quarter sheets, and on all scales where sheets are partially blank.

(7) Lack of explanatory information with the maps.

B. Inaccessibility. The general public knows little or nothing about the maps, because of—

(1) The system of sale.

(2) Bad indices and absence of information as to age and style of maps published of particular districts.

It is impossible to estimate the separate effect of each of these defects in the maps and in the means of distribution, but a few examples will establish the fact of their existence and the way in which they operate in depreciating the value and checking the sale of the productions of the Survey.

Suppose, for instance, a member of this Association coming to Leeds desires a handy map of the district, and turns to see what the Ordnance Survey provides for him. He will find the town of Leeds is in the south-west angle of sheet 70 of what is facetiously called the new one-inch hill-shaded map, date 1858. He will be able to obtain the sheet to the west of the same series, but for the southern half of the desired map he will have to fall back upon two sheets of the old survey, dated 1841-3, much inferior, of a different shape, containing only three-quarters of the area of the new sheets, but equally expensive. The resulting map is eminently unsatisfactory. It shows defects 1, 2, and 5 very conspicuously. To the environs of Leeds as they are to-day it is no guide whatever. So far as the ground forms are concerned the two upper sheets are good enough, but in the two lower the hill shading has practically vanished, and in many places the roads and rivers are fast fading away also. The plates are obviously quite worn out.

Let us now look at the English lake district. Here, at all events, if the maps meet popular requirements, they ought to be in constant use. But what do we find? Traverse the lake district from one end to the other, you will see plenty of maps of all kinds in use, but seldom indeed will you find that any one of them is an Ordnance map.

Here are four sheets, 29, 30, 38, 39, again of the new series, though this time the date is only quarter of a century back. Defects 1, 2, 3, and 5 are all more or less noticeable.

Here the want of uniformity is not in the age and style or shape of the sheets, but in difference in depth of shade of the impressions. It may be said that by careful selection the sheets might be better matched. Possibly so at the Survey Stores. This is the best the agent could do. It is a fair specimen of what the public gets, and therefore one by which the Survey must be content to have the productions judged. The hill shading, particularly in the Coniston sheet, has become quite woolly, consequently the hill forms are deficient in relief and character. A very large proportion of the names are unreadable, and the plate seems to have been injured in places by the erasure or alteration of some of the figures denoting the heights of the mountains.

The roads and footpaths are very indistinct, and some of the most frequented are not even shown. I have recently compared the maps of this district by Bartholemew in a well-known guide book, and for pedestrian purposes, bald as they are, they are more useful than the Ordnance maps ?

The important question of price also comes in. The Ordnance sheets alone cost 4s., but to be of any use they must be made up in a portable form, which can only be done by sectioning and mounting. Thus, before the Ordnance map of this district can be utilised an outlay of 7s. 6d. is required, a sum sufficient to buy two copies of a good guide book with all its maps. Can we be surprised, then, that the public do not buy the Ordnance maps ?

Sheet 38 is printed from an electrotype taken in 1882. I do not know at what date the plan of keeping the original plate or the first electrotype matrix was introduced, and it may be that the plates of these sheets, for which at one time there was a great demand, are much worn, which would account for the fact that the lake district sheets now sold are some of the worst of the new series of the northern counties. Compare, for example, the Hawes sheet, No. 50, which retains nearly all its original beauty and crispness of definition in the ground features.

If it be of the south of England that we require a topographical map, we shall fare no better, rather worse. Last year I required a map for the volunteer manœuvres in the neighbourhood of Eastbourne. There is no map suitable for military purposes—that is, showing the ground features—of more recent date than 1813. It is one of the earliest maps of the Ordnance Survey, published at the Tower by Colonel Mudge. For the time of its execution, undoubtedly a most creditable piece of work, curiously enough it is in a better state, so far as regards definition, than the maps of the lake district made fifty-two years later ; but speaking from experience, I can say that the ground features are by no means correctly delineated. This can be proved by another sheet, No. 8, also done under the direction of Colonel Mudge, and evidently by the same hand, which can be compared with the new hill-shaded map. From about 1830 onwards the hill shading much improved, and has continued to improve until it can now be fairly claimed that maps recently issued are unsurpassed in this particular by the productions of any country, but it is no satisfaction of the claims of the inhabitants of Sussex to be told that they can have an exquisite map of the Western Highlands of Scotland, and no one will maintain that these maps of sixty to eighty years ago answer the reasonable requirements of to-day. Towns such as Eastbourne, Hastings, St. Leonards, and Newhaven are shown as mere villages. It is upon an entirely different England we are gazing in these sheets, and one is inclined to resent the attempts made here and there to modernise them by addition and alteration ; the railways especially seem a shocking anachronism. Such additions and alterations destroy the real value of the maps as antiquarian documents. In this connection it is particularly interesting to note the disappearance of the commons and the village greens in comparing the old and the new maps.

Why should the public buy these maps when it can get maps at one-quarter the price, which, for most purposes, are as useful, and, what is of greater importance, up to date ? The truth is that of the whole of the southern counties of England (except in the few places where the new hill-shaded map is published) no topographical map worthy of the name exists, and for the remainder of England and Wales, where it does exist, its antiquity robs it of much of its utility, and the plates of populous areas are worn out. The so-called new survey, north of the line Preston, Leeds, Hull, we have seen, is from 25 to 35 years old ; whilst the few sheets published of Surrey, Kent, and Hampshire are from surveys at least 20 years old. The more recent sheets published of this map do not bear the date of the survey. The Aldershot sheet, for example, published in 1878, is from a survey of '70-'71. Reference has to be made to the six-inch map to obtain this information. This is not fair to the purchaser, who, in most cases, is ignorant of the internal arrangements of the Survey, and imagines the map to be corrected up to or within a short time of the date it bears.

The new one-inch map, published without the hill features, called the outline map, gives no idea of the nature of the ground. Only contours of each 100 feet are given, and these are so finely drawn as to be barely visible. Even without the hill shading this map is often so crowded with detail that it is very confusing and difficult to read. Take, for example, sheet 38.

Many sheets are spoilt by the number of names of parishes and boundaries which might very well be omitted from both the outline and hill-shaded one-inch maps. Of the 360 sheets comprised in the new one-inch map of England and Wales, 179 have been published in outline and 81 with the hills shaded. The outline map cannot be considered anything more than a stop-gap publication. It is true the Director-General says the outline map appears from the numbers sold to be more popular than the hill-shaded. One is loth to assume that the ignorance of topographical representation in this country is so great that there is a preference for the sweet simplicity of a map giving practically only the horizontal development of the ground over one representing both the horizontal and vertical configuration. But it can easily be understood that an outline map from a survey of 1870 may be preferred to a hill-shaded one of 1818, which, as we have seen, is the only choice open to a Sussex man. There is a danger, too, in the publication of the outline map which must not be overlooked, and that is that the Treasury may consider it an excuse for still further delays in the publication of the topographical map. Looking at the return for the last four years, it would appear as if advantage had already been taken of that excuse. Here is the return:—

England and Wales, 59,540 Square Miles.

New one-inch map. State of publication.

Year ending	Total area completed.		Area completed during year.	
	Outline.	Hills.	Outline.	Hills.
Dec. 31st, 1886	18,616	11,544	432	52
„ 1887	24,150	11,955	5,534	411
„ 1888	25,101	12,524	951	569
„ 1889	29,478	12,524	4,377	Nil

This table shows that last year the hill-shaded map was not advanced at all, whilst the maximum rate any time during four years has only been two or three sheets per annum. At this rate the map will be completed towards the close of the next century. Fortunately the case is not quite as bad as it would seem to be from the present rate of progress. In his last report the Director-General estimates that it will be completed in 1925. Anyway we shall have to wait for nearly a generation before we shall be in possession of a complete and tolerably uniform topographical map of the United Kingdom. Surely such a statement by itself is sufficient to condemn the system by which the Treasury doles out the grants for each particular map bit by bit.*

The deficiencies of the one-inch map have been treated at some length because it is the most important from the popular point of view. Most of the defects, it will be seen, are due to the age of the maps and the want of revision, and the same will be found to hold good of the six-inch and larger scale maps.

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* In consequence of the limited sum spent on it annually, the hill-shaded map of England and Wales alone will have, when completed, occupied 58 years in the making.

The six-inch or county map has undergone more vicissitudes than any other of the Ordnance series. The maps of the counties in England and Scotland first surveyed on this scale are the finest productions of the Survey (for examples see sheets 78 and 79 of Lancashire). Commenced in a style which soon aroused the attention of economists in Parliament, it was stopped in 1851. Then came the battle of the scales, after which the $\frac{1}{2500}$ scale was finally adopted as that of the parent Survey. When ultimately it was decided to resume the publication of the six-inch map by reduction from the larger scale, it was with a greatly reduced number of contour lines. Unfortunately it appeared to the Commission of 1858 that the original work was too elaborate, and it recommended some economies, which, of course, the Treasury jumped at, consequently the rest of the country had been deprived of the only map which gives an adequate delineation of the forms of ground. For nearly all scientific purposes, but especially geological and engineering, maps on this scale are essential (where the $\frac{1}{2500}$ scale is published there is little other use for them); in fact, it was from the representation of geologists and engineers that the publication was continued. Being a map intended for the use of particular classes, it ought, as far as possible, to meet the requirements of those classes, which in its present form it does not. The adoption of the photographic method of reduction and printing necessitated the publication in quarter sheets, which can never have the exquisite finish of the old sheets of Lancashire and Yorkshire. But however much the absence of artistic merit may be regretted, a process which insured more rapid publication would have been welcomed had it not been accompanied by an advance in price equal to 60 per cent. Before the introduction of the photozincographic method of printing, the introduction of photographs for the reduction of the cadastral maps is said to have effected a saving of £35,000 on the survey. The users of the six-inch map can fairly claim that, as they have to pay so much more for an inferior map, the least that could be done for them is to spend the money saved at their expense in completing the contouring at 25-feet intervals throughout the country.

One of the most irritating defects of the large scale maps is the partly blank sheet. In the case of the more recent issues this defect has been remedied by transferring a portion of the contiguous county map, but when the two surveys are of very different dates and style this can hardly be successful; but still it is better than the expensive patchwork arrangement which is required to make a map of a river basin, when the rivers and tributaries are county boundaries, as, for example, the Mersey. To complete one Cheshire sheet, No. 20, of the valley of the Goyt, no less than six quarter sheets of the Derbyshire county map are required. The six-inch, when up to date, affords a handy town map, but where the lines happen to cross a town the number of sheets required (which may be as many as four, costing 4s.) gives the Ordnance map no chance in competition with inferior but very much cheaper reproductions. If the maps for which the nation has paid so large a sum are to be freely circulated the Department must learn to cater for public requirements. If private individuals find a remunerative sale for cheap reproductions of the Survey, the Department must compete with them, not necessarily as to price, but the price and quality combined must be such as will, in the case of an educated purchaser, turn the scale in favour of the Ordnance map. There is no reason why special sheets of all considerable towns and environs should not be prepared by transfers on the six-inch and one-inch scales. There is amongst the miscellaneous maps of the Survey one of the environs of Glasgow, on the one-inch scale, prepared in this way (price 2s.), which, if printed in colours, hill-shaded, and folded into a cardboard cover, would answer the purpose.

It cannot be denied that most of the Ordnance maps are very expensive. Sir

Charles Wilson says that the selling prices per square inch of the Ordnance Survey maps are cheaper than those of foreign countries, excepting France and Italy. This, however, is hardly the point. The Survey costs, roughly speaking, a quarter of a million per annum, and the value of the maps sold annually is about £13,000. Clearly the price of the maps is a matter of very little importance for the amount yielded, but it is of the greatest importance if the maps are to be made available for general use. The basis upon which the prices of the different maps are fixed does not seem a very rational one. It lies in a very refined distinction between the cost of production and the cost of publication. The cost of production is supposed to end with the engraved copper plate in one case and with the photographic negative in the other. The subsequent processes of printing, preparing new editions, cost of storage, &c., are called expenses of publication. These being heavier in the photographic process, the price of the maps produced by this method is greater. Thus, whilst the total cost of map-making has been largely reduced by the introduction of photozincography, the nation getting more work for the same money, the selling price of the maps has been raised 60 per cent. A system which can produce such an absurd result as this is surely in need of reform.

So far as the great cadastral map is concerned there is no ground for complaint. It fully answers all that is required in a work of that class, and is one of which the Department may feel justly proud. But the very best work in maps becomes of very little value if not kept up to date. It is quite time that a permanent revision department was instituted on a liberal basis if the great work which has been accomplished is to retain its value. Already large portions of it are disgracefully obsolete, and consequently the smaller scales reproduced from it. The new one-inch lags so far behind that it is often obsolete before publication. Does any other nation in the world exhibit such a spectacle as a Government cartographical institution engaged in the production of obsolete maps? Again and again has this, the necessity of revision, been pointed out. Every Director-General has pressed the matter on the attention of the Government; it is dwelt on in every annual report. In 1882 the Treasury "recognised the necessity of a revision of the Survey which should be constantly in progress at such a rate as would complete the whole in every fifteen years at least;" but it was not until December, 1886, that they decided to commence, adding the following extraordinary memorandum: "It is to be clearly understood that in agreeing to the commencement of the revision they do not bind themselves to any fixed term for its completion, or to the annual provision of any fixed sum for carrying it out." This is the sort of thing which is absolutely fatal to the proper conduct of a department like the Ordnance Survey. It is a repetition of the indecision and blundering which have cost the country so much in the past, and to which most of the deficiencies of the Survey are attributable.

It would be a good plan for the information of the map users if this Treasury memorandum were printed in red on the margin of every sheet which has not been revised for more than fifteen years.

The cadastral map and the town plans can never be expected to have anything but a limited sale, but they might be much more largely utilised if the arrangements for sale and distribution were put upon a reasonable basis and measures taken to let the inhabitants of various localities know something of the state of publication in their own districts. If the six-inch and one-inch maps were better known it would probably lead to an increased sale of the larger maps. There is another and important step to be taken for the utilisation of cadastral surveys, which is pointed out by Sir Charles Wilson in his last report, namely, the compulsory use of the Ordnance Survey as the basis of valuation for local and imperial taxes and transactions affecting land.

Since Mr. Galton referred to the inaccessibility of the maps an even worse arrangement than that in vogue at the time has been devised for the sale of the maps. In 1882 the Office of Works closed the London depot, and, notwithstanding the opposition of Colonel Stotherd, then Director-General of the Survey, abolished the agencies throughout the kingdom, handing over the business of the sale of maps to Her Majesty's Stationery Office. This transfer was made on the ground that an undivided responsibility and control would be secured, and from the intimate relations of the Stationery Office with publishers the sales would be increased. The Stationery Office, however, apparently had no intention of taking the responsibility, for they straightway appointed Mr. Stanford sole agent for England at 33⅓ per cent commission, the Government to pay the cost of carriage from Southampton. In 1886 tenders were asked for a contract as sole agent for ten years on these terms. Mr. Stanford's offer of £600 per annum for the English agency was accepted.

Other arrangements were entered into for sole agencies in Edinburgh and Dublin.

General Sir Henry James recommended that postmasters throughout the country should be agents, a proposal which was also advocated by Mr. Galton, but the Treasury refused to appoint postmasters. Of course no new arrangement for the sale of maps can now be entered into until the expiration of the contracts.

One of the effects of the agency monopoly is that the local retailers of the maps seldom know much about the Survey, except in cases where they were formerly agents under the old system, and it is only in the larger towns that they keep any stock. In the country it is a matter of extreme difficulty to obtain information. If a resident in Carnarvonshire or Anglesea, for example, wanted a six-inch map of his neighbourhood, and was successful in obtaining it in ten days' time, he would have shown himself to be a man of energy and resource. For the absence of an intelligible guide to its publications the Department presumedly is responsible. The official catalogue is a bewildering maze. The index maps, excepting that to the one-inch, with which it is furnished, are beneath contempt. In addition to the catalogue there is published a series of Chinese puzzles, at 2d. each, called county indices. They profess to show the sheet lines and reference numbers of the 25-inch, six-inch, and the new series one-inch scale maps, but without the assistance of a skilled interpreter are useless. Those of the counties just mentioned are fair specimens. If a would-be purchaser of some of these has finally hazarded a guess at the number of the sheets he requires, there is nothing to indicate whether they are published or not. If he requires a one-inch map, he will, sooner or later, discover that he must get another index, the sheet lines shown on the county index referring to a map which does not exist, and which may not be published for many years to come.

Something might be done if public institutions such as the central free libraries in our great towns were supplied with copies of the Ordnance Survey publications of the locality, and full explanatory particulars of their objects, purposes, and the means by which copies could be obtained.

Certainly it is high time that steps were taken to remove the obstacles which interfere with the full utilisation of the Ordnance Survey. The establishment of a revision department on an adequate footing is of first importance. This can only be done by increasing the proportion of the annual grant devoted to the revision to a sum sufficient to clear off arrears. As the cadastral survey is now nearly complete, the expenditure under that head will rapidly diminish, so that if the total vote for the survey is maintained at its present level for a few years the arrears of revision might be overtaken without addition to the present annual cost of the survey to the nation. That this will not be done unless very strong representations are made t the Government is evident from the amount of the grants of the four years since a allowance was first made for the revision and from the remarkable Treasury minute quoted above. By a thorough revision most of the defects in the maps pointed out above might be remedied, and a great national work saved from ruin for want of the proverbial ha'porth of tar.

Year.	Total vote for Survey.	Under head of Cadastral Survey.	Under head of Revision.	Cadastral Survey and Revision together.
1886-7	£258,000	£189,951	£5,000	£194,951
1887-8	230,000	149,079	15,000	164,579
1888-9	223,000	93,164	64,000*	157,164
1889-90	215,000	30,000	114,660	144,660

The following letter from Sir C. Wilson, Director-General of the Ordnance Survey, has been sent to Mr. Crook in reference to his address :—

2nd Sept., 1890.

Dear Mr. Crook,—All Government Departments are the better for criticism, especially when it comes from such a well-informed critic as yourself. The Ordnance Survey Department cannot, however, be held responsible for the obsolete character of many of the maps, or for the system under which Ordnance Survey maps are now sold to the public.

No one can be more sensible than the Director of the Survey of the pressing need for a revision of the maps, but the question is really one of money, which it is for Parliament and not for the Department to decide. I think you have under-estimated the pressure which has from time to time been brought to bear upon the Government to complete the 25-inch survey of Great Britain, and however much we may regret it, we can scarcely be surprised that the survey was pushed forward at the expense of revision. The result is that in many places revision must now be virtually a re-survey.

The present system under which Ordnance Survey maps are sold by sole agents for England and Wales, Scotland, and Ireland respectively, was adopted, as you remark, contrary to the advice of the Director of the Survey. Mr. Chaplin, however, under whom the Survey now is, stated in reply to Mr. Webb last session, that "when a favourable opportunity occurred a change in the system would be carefully considered." I believe that under a proper system the sale of the maps would be enormously increased, and exceed the sum mentioned by Sir Henry James.

I must point out one or two errors in your generally accurate paper. The six-inch map of the kingdom was completed in March last; that of Ireland has long been completed, and officially recognised as the basis for all dealings in land, and for valuation for local assessment. About one-half of the six-inch map of Ireland has been revised to date on that scale. Until recent legislation with regard to land in Ireland, the six-inch map was considered large enough for all practical purposes by those who use it, and the necessity for a 25-inch survey has only been felt during the last few years.

I do not know what you mean by a "so-called new survey" of the Northern Counties. There is a "new series" one-inch map, so called to distinguish it from the old one-inch map, which was not based on a large-scale survey as the new one is.

The complexity in the one-inch map of which you complain is a matter of opinion. No country has such an enormous amount of what may be called artificial detail, buildings, roads, railroads, enclosures, &c., as England, and it is a question of taste how much of this should be shown on the one-inch scale. We have more complaints of omissions than of want of clearness. It is impossible to please every one, and the boundaries to which you personally object are the very things which most people insist should appear on the map. They are undoubtedly found very useful but I agree with you that they do not improve the appearance of the map as a work of art.

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* The actual amount set apart for revision is nothing like so large as here shown, the survey of Lancashire and Yorkshire on the $\frac{1}{2500}$ scale having been charged to the revision account.

With regard to price, if the one-inch sheets were printed on an inferior paper from a transfer to zinc, as is done in France and Italy, they could be sold at 6d. each.

You are right as to the one-inch hill sheets of the Lake District. The originals were beautiful specimens of engraving, and there was a great demand for impressions. Unfortunately the plates were worn before the present mode of preparing matrices and duplicates was perfected, and all that could be done was to arrest the disease The plates will eventually have to be re-engraved, but this cannot be taken in hand until the new map of the south of England has been engraved. The slow progress of the new hill map is due to the difficulty of obtaining qualified engravers, and of training young men to this artistic work.

I gather from your paper that one of the faults you find with the Department is that it does not construct maps for popular requirements, such as a combinatien of sheets, so as to give large towns, like Leeds, with their environs on a single sheet. I think that in this you are rather ignoring the principle upon which, whether rightly or wrongly, the Ordnance Survey has always been conducted. The department is directed to make maps on certain scales, which were settled after many years of controversy, for State purposes. The construction of special maps for popular use was designedly left to private enterprise, and any attempt to compete with private firms in "catering for the public" has been discouraged. I may remind you that the Guide Book maps to which you allude are all based on the Ordnance Survey, and could not have been produced and sold at such slight cost without it. The public thus, and in many other ways, indirectly derive benefit from the great national survey.—Yours truly, C. W. Wilson.

SUPPLEMENTARY NOTE BY THE AUTHOR.

Since the above paper was read I have several times been asked to indicate more precisely the steps which should be taken to render the Ordnance Survey maps more popular and useful, and the remedies for the many defects which I showed to exist.

Whilst I think I have pretty clearly pointed to the remedies in illustrating the defects, I agree that when it is desired to reform a Government department the advocates of reform cannot too distinctly define what they want. So long as definite demands, backed by public opinion, are wanting, the officials will do no more than excuse and explain existing short-comings. I have therefore endeavoured to concisely formulate my views in the following series of recommendations:—

1. The immediate establishment of a permanent revision department with a fixed annual grant calculated on the basis of providing for the revision of the whole of the maps in a given period. The necessity of revision was recognised by the Treasury in 1882, and it was suggested that it should be constantly in progress, at such a rate as would complete the whole in fifteen years at least. A revision at intervals of fifteen years would probably suffice for the country districts, but in more populous districts it would be advisable that the interval should be less. Possibly it would be found quite as economical in these cases to keep a small force continuously at work. But whatever period be decided upon as that in which a complete revision is to be made, the enormous accumulated arrears must be dealt with. Either the revision department

must for some time be on a much larger scale than would be required had the work not been neglected for so long, or the arrears must be dealt with separately. The latter would probably be the better course, such portions of the Survey as are not more than twelve to fifteen years old being handed over to the revision department. The remainder might be dealt with as re-survey, and a vote of sufficient amount taken to enable the work to be completed in the shortest possible period. It is very important that the total amount of grant for the Survey be not further reduced until this most necessary work has been completed.

2. That the boundaries and areas of the Ordnance Survey maps be made legal boundaries and areas in England and Scotland, as they already are in Ireland, so that they may form a basis for all valuation for local or imperial assessments.

3. That steps be taken to expedite the publication of the new one-inch hill-shaded map of England and Wales, which, according to present arrangements, will not be completed until 1925. This country is, amongst the chief civilised states, almost the only one not yet possessed of a complete reasonably uniform and accurate topographical map, the component sheets of which are from surveys of approximate date. If it be impossible to train a sufficient number of engravers to insure the publication of this map within a reasonable time, some other method of producing it should be adopted.

4. An edition of the one-inch map should be printed in colours and sold at the lowest possible price.

5. Of all important towns and districts of special interest, where the position of the sheet-lines necessitates the purchase of several sheets in order to form a map of a limited area, single-sheet maps combining the necessary portions should be published both on the one-inch and six-inch scales.

6. The contouring at 25ft. vertical intervals (as in Lancashire and Yorkshire) should be completed throughout the kingdom.

7. It should be considered whether it is not practicable, in new editions of the six-inch maps, to rearrange the sheet-lines to avoid the unsatisfactory patchwork arrangement required to form a map of a district through which a county boundary runs. All partly-blank sheets should be completed by transferring the necessary complement from the contiguous county map.

8. An examination into, and revision of, the scale of prices of the various maps, with a view to removing some of the existing anomalies.

9. A concise explanation of all symbols and characteristics used to be given on the margin of sheets.

10. A new general catalogue and index to the Survey, with simple index diagram, giving date and style of map, and whether engraving, zinco, or photo-zinco, with the names of the chief places on each sheet.

11. That when the contracts for sole agencies expire the old system of country agents drawing their supplies direct from Southampton be reverted to, if no better system can be devised.

ON THE TEACHING OF GEOGRAPHY IN RUSSIA.

[Read to the Members, by MR. HUGH ROBERT MILL, D.Sc., F.R.S.E., Wednesday, October 8th, 1890, in the Library.]

AT the close of a paper on "Geographical Education in the Caucasus,"* M. Victor Dingelstedt says: "The same educational programmes obtain throughout the whole Russian empire, and even private schools are tolerated only on the condition of their formulating their programmes according to those of the Government schools. In conclusion, I may add, as a general remark, that the study of geography is not yet made attractive in our schools. Geography imparted in the manner above indicated is not liked by the pupils, and does not really evoke their love of knowledge. It only taxes their memory. Text-books of geography are written only to suit the mere memory-work of this kind of teaching." The bad character given to Russian geography books by such a distinguished authority does not deprive these works of interest to outsiders. The Russian empire is such an impressive geographical fact, stretching as it does from Western Europe to Western America in one solid mass, under one inflexible control, that even a defective text-book, merely in virtue of its widely-displaced standpoint and atmosphere, must attract the attention of educationists in this country. The difficulty of the language and, perhaps even more, the apparent uncouthness of the Russian alphabet have hitherto kept the inhabitants of Western Europe in ignorance of the geographical literature of Russia, and of the system of instruction pursued there.

During a brief visit to Russia, in June, 1890, I had an opportunity of making myself acquainted with the outlines of the system of instruction officially approved, and while frankly accepting M. Dingelstedt's judgment as to the unattractiveness of the manner of teaching, I was greatly struck by the arrangement of the subject, and still more by the interesting and ingenious nature of the diagrams employed. While I must confess that my knowledge of Russia is confined to the alphabet and geographical terms, and while I must therefore abstain from anything in the nature of criticism of style or statements, the following summaries may be relied upon as a general scheme of geography as taught in Russia.

The books† to which I wish to direct attention are all large thin octavos, printed in clear type, on very poor paper, and bound in marbled boards. They all contain wood-block maps, boldly drawn, and expressing the leading features of countries very clearly.

1. A Text-book of Geography. General summary of mathematical, physical, and political geography. Course for lower schools. By K. Smirnoff. 27th edition, corrected to 1886. St. Petersburg: Arnold, 59 Litainai, 74 pp., fourteen woodcuts and two folding maps. Price, 40 kop. = 1s. Eight pages of mathematical geography disposes of the earth as a planet, lunar phases, eclipses, tides, and the representation of latitude and longitude. Thirty-four pages are given to physical geography, that title being applied more strictly than we are in the habit of employing it, as it refers almost exclusively to the natural divisions and configuration of the globe, touching very lightly on the processes by which the configuration came into existence. An effective

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*Scot. Geog. Mag. II., 1886, p. 276.

† The books are in the Library.

diagram shows the relative extent of land and sea, distinguishing the areas of each ocean and continent, and of lowlands and highlands in the latter. The typical forms of land and sea are illustrated by a sketch map of the Crimea and Sea of Azoff. The form and distribution of mountains and rivers receive a comprehensive diagram of familiar design, showing the relative lengths of rivers, heights of mountains, altitudes and depths of great lakes in each continent. The relative sizes of lakes are also brought out, by delineating on the same projection and scale all inland sheets of water from the Caspian to the Lake of Constance. The sea is next considered, and the atmosphere with its prevailing winds and typical climate. The distribution of vegetation in relation to altitude and latitude is the subject of a most ingenious and original diagram, the heights on which are shown in feet. The remainder of the book is occupied by a summary of the governments and chief towns of Russia, and of the countries and chief towns of the several continents. Outline maps of the world in hemispheres and of Europe complete the work. These have the position of the chief countries and towns indicated by an initial or contraction, and each is prefaced by an extended table of places and populations.

2. A Text-book of Geography. Asia, Africa, America, and Australia considered physically, ethnographically, and politically. Gymnasial Course. By K. Smirnoff. 30th edition. 1890. pp. 157. Six statistical diagrams, and a folding map of each continent. Price 60 kopecks = 1s. 6d. The great proportion of space being given to Central Asia, China, and Thibet, Persia and Arabia aptly marks the difference in standpoint between the Russian and the British schoolboy. Nearly one-third of the book consists of an Appendix of notes enlarging on special resemblances or contrasts in localities, characteristic products, religions, customs, plants, animals, &c. A set of two statistical diagrams is given for Asia, Africa, and America, one being divided into rectangles proportionate to the area of the several countries, the other into spaces proportionate to the populations of the countries. The black and white maps of the continents are clear and uncrowded, and correspond in orthography with the text, a desideratum rarely if ever attained in English books.

3. Text-book of Geography. Europe considered physically, ethnographically, and politically. Gymnasial Course. By K. Smirnoff. 27th edition. Corrected 1886. pp. 187. Six statistical diagrams, and thirteen one-page maps. Price 60 kopecks = 1s. 6d. The fact that the geography of Europe in this series comes after that of Asia reminds us of the much closer relations which bind Russia to the eastern than to the western world. Consistently with this view, after a few pages devoted to general configuration, climate, production, and races of the continent, the geographical description commences with Greece at the south-east corner of Europe and works gradually north-westwards, diminishing as it goes until it ends with the British Islands, to which, however, a fair amount of space (20 pp.) is devoted. The statistical diagrams are ruled in millimetre squares, and show (1) areas, (2) populations of European states, (3) areas, (4) populations of the states of Germany, (5) areas, and (6) populations of foreign possessions of European states. Each of the principal countries, or groups of countries, is represented by two maps, a physical sketch-map naming the mountains and rivers, and a political sketch-map showing the artificial divisions and towns. A complete list—and by no means a long one—of the names, or rather contractions, on each map is printed on the page opposite, so that the pupil may make sure that he knows the positions on the map of all the places referred to in the text. The map of "Belikobritania," a term which apparently includes Ireland, is at once physical and political, and is provided with three little insets showing London, the estuary of the Thames, and the district from Manchester to Birmingham on an enlarged scale, but the whole effect is very poor. Some peculiarities of transliteration illustrate the

poverty of the Russian phonetic system, despite its thirty-six letters—Vaitt, Kleid, Uash, Tvīd, Fort, Duvr, Portsmut, Vorchester, and Gell, or Ghell, stand respectively for Wight, Clyde, Wash, Tweed, Forth, Dover, Portsmouth, Worcester, and Hull, though since Russian vowels depend for their sound on the consonant following, on the last named the *e* has the value of *u*. Taken together these three little books of Smirnoff's form a series which seem excellently adapted to impress a clear and orderly idea of the earth's surface in its physical and political aspects upon the mind of a pupil, provided that the execution of the plan were as effective as its conception.

4. Text-book of Geography. Russian Empire. Gymnasial Course. By E. A. Lebadeff. 16th edition, 1890. Corrected and enlarged. Arnold. 196pp. Small black and white map of Russian Turkestan and large folded coloured map of European Russia. Price 1 rouble = 2s. 4d. A general account of area, population and boundaries of the Russian empire is followed by 100 pages descriptive of European Russia, and 30 dealing with Russia in Asia. The book concludes with 45 very closely-printed pages on ethnography, enumerating all the chief races inhabiting the empire, and giving a brief account of each. The geographical part lays special stress on the economic conditions and natural productions of the various governments.

The remaining book appears either to be non-official, or to form an exception to M. Dingelstedt's remarks. In plan at least it reverses the arrangement to which he takes exception, and proceeds from the familiar to the unknown.

5. The Instructor in General Geography. By P. Belloch. Elementary Course, comprising preliminary ideas, description of birthplace and native country, and a review of the whole globe. 16th edition, 1887. St. Petersburg, N. P. Karbasnikoff. 108 pp. Five folding maps in colours. Price 50 kopecks = 1s. 2d. This little book struck me as so fully carrying out the modern idea of teaching geography in widening circles from the schoolroom outwards that I asked my friend, Dr. James Walker, of Edinburgh University, to be good enough to translate the preface and summary, which are here reproduced in their entirety. The first sentence is a little obscure. It may mean that the plan referred to is that in common use or that it is one theoretically useful, probably the latter. The want of either a definite or an indefinite article in the Russian language not unfrequently gives rise to such ambiguity in translation.

PREFACE.—According to the plan followed in an elementary course of general geography, attention is first given to the development of the pupil's knowledge of the immediate locality with which he is most familiar. Then, after being accustomed to representations on paper of the places he sees about him, the pupil acquires information both on the maps and practically, about the surroundings of his residence to the limits of the visible horizon. The use of maps is taught from the beginning, and after this is fully understood from the visible examples it is extended so as to afford a general knowledge of the whole fatherland. Finally, a brief review of the entire terrestrial sphere is given, adapted to serve as an introduction to more advanced courses of earth-knowledge.

SUMMARY OF CONTENTS.

THE PLAN AND MAP. 6 pp.—Making plans by eye measurement. Making plans by actual measurement. Scales. The horizon and points of the compass. Geographical maps. Questions.

DESCRIPTION OF BIRTHPLACE. 14 pp.—Description of St. Petersburg (with large-scale plan, showing the principal streets, &c., within a radius of 6 versts from the Winter Palace). Vicinity of St. Petersburg (with a map, on a scale $\frac{1}{30}$th of the previous, extending to a radius of 30 versts, and including Cronstadt, Peterhof, Tsarskoeseloe, &c.). Questions. Region of the Neva and Great Lakes (with a map, on a scale $\frac{1}{250}$th of the first, and extending to a radius of 300 versts from St. Petersburg, taking in the Onega Lake, Helsingfors, and Reval). Questions.

DESCRIPTION OF FATHERLAND. 11 pp.—Description of Russia with regard to its natural conditions. Description of Russia with regard to its population. Questions (illustrated by a map of European Russia with neither scale nor degree marks, and a map of the Russian Empire with the north pole as a centre).

GENERAL WORLD DESCRIPTION. 10 pp.—The globe and planisphere. Appearance and condition of the earth. Natural divisions of the earth. Form of degree, degree, net, on the globe and on maps. Latitude, longitude, and zones. Questions.

SURFACE OF THE EARTH. 4 pp.—Natural divisions—continents, islands, &c. Economy of the earth—plant and animal life. Questions.

THE OCEANS. 13 pp.—General nature of the sea. The Atlantic Ocean and its parts. The Arctic Ocean and its parts. Questions. The Indian Ocean and its parts. The Pacific Ocean and its parts. The Antarctic Ocean. Economy of the sea. Questions.

THE DRY LAND. 14 pp.—Distribution and outline of the land. Land surfaces—(1) low-lying, (2) high-lying—(*a*) tablelands, (*b*) mountainous tracts. Economy of mountainous regions. Questions. Water of the land. Questions.

CLIMATE AND LIFE. 7 pp.—Climates. Distribution of land plants. Distribution of land animals. Questions.

THE PEOPLE OF THE GLOBE. 6 pp.—Population of the globe. Distribution of people. Classification of people (1) by races, (2) by languages, (3) by religions, (4) by mode of life.

ARTIFICIAL DIVISIONS OF THE EARTH'S SURFACE. 17 pp.—Eastern Europe. Western Europe. Southern Europe. Asia. Africa. America, north and south. Australia. Questions.

APPENDIX. 3 pp.—On the description of a neighbourhood. The design of this book is excellent, but is not consistently carried out, as the maps only illustrate the first third, and the remaining two-thirds are without any help from maps or diagrams. The balance of the book also appears faulty, the space devoted o the earth as a whole being too great for an elementary treatise. The plan of widening outwards is peculiarly applicable to the surroundings of St. Petersburg, where the country, flat enough to afford a wide horizon, and present a map-like prospect from any tower or house roof, is admirably diversified by rivers, canals, lakes, woods, roads railways, and villages. It is remarkable that none of these books contain pictures of scenery or peoples, and more surprising, considering that the Russians are pre-eminently a picture-loving people, and value pictures for practical as well as æsthetic reasons. Even in the capital the lower classes view them as an easy and pleasing substitute for written words. Every shopkeeper advertises by pictures, not descriptions, of his wares, painted with wonderful fidelity on the shop front. The illustrated papers published in St. Petersburg are excellent, several of them vying in their treatment of wood engravings with the best magazines of the United States. It is to be inferred that Russian geographers in providing systematic and carefully-graded classbooks or school use, have not yet seen the necessity of making them attractive, an inference which M. Dingelstedt's opinion fully justifies.

The habit of viewing Asia rather than Western Europe as the nearest neighbour to Russia, evinced in schoolbooks and atlases alike, gives rise to rather amusing confusion in some cases. It happened that when we were travelling in Finland a young lady telegraphist was a fellow-passenger in the diligence. She was proceeding from St. Petersburg to a telegraph office in a remote locality, as a first instalment of the Russifying movement. She asked our Russian-speaking friend how long it had taken us to come from England. "Was it a year?" He replied, "Six days," to which she, quite certain he had made a slip in his Russian, answered confidently, "*Months*, you mean." Possibly she remembered that America lay east of the broad Russian Empire, which takes many months to travel, and that England lay a long way east of America, and forgetting the short cut the other way round, assumed that it must be very far off.

I must say a word in praise of the Russian school atlases. The standard one appears to be A. Ilina's Atlas for the Gymnasial Course, sold at 3·50 roubles = 8s. 6d., and containing forty-eight plates, many of them very large folding maps. There is a large folding plate of astronomical diagrams, six general one-page maps of the world, showing drainage areas and ocean currents, temperature, rainfall, races, and religions. Two beautifully clear, though small, maps of Europe show in the one case physical features by hill-shading and surface-tinting combined, the other political divisions. A large folding sheet, scale 1:12,600,000, shows the ethnography of Europe. Russia in Europe has four maps on the scale 1:7,350,000 devoted to it, showing the governments, the orography, climates, and natural products respectively (the last-named is one of the most beautiful examples of cartography we have seen). A huge sheet folded many times, gives the whole of European Russia, with political divisions, railways, and canals on the generous scale of 1:4,000,000 (about 60 miles to an inch), while inset plans of the seven largest towns garnish the corners. A detailed ethnographical map of the Russian Empire follows. There is a fair railway map of Western Europe, and then a series of inadequate sketches of European countries, usually packed two in a page, though Switzerland and the Alps receive much more space. The British Isles are dismissed in one poor little sketch, without railways, on the scale of 1:6,800,000. Two general maps of Asia and one of India, on a small scale, are dwarfed by a physical map of Russian Central Asia, and a grand folding sheet on the scale of 1:10,500,000, showing the whole Russian Empire in its political divisions. The other continents have two small maps each, North America getting a third to show the United States. Central America is shown on a large scale, crossed by no less than five railways from sea to sea. At the end there are four sheets giving plans and sections of all the connecting canals in Russia.

In atlas and textbooks much attention is devoted to ethnography, the extraordinarily composite character of the races subject to the Tsar being always kept in mind. Longitudes are reckoned from the meridian of Pulkova for the Russian maps, with that of Ferro inserted in the margin. Most of the others have Ferro as the prime meridian, and one only has the longitude from Greenwich inserted.

Dr. Nansen's Next Expedition.—As various erroneous statements have been made with regard to Dr. Nansen's Arctic expedition, the London *Times* gives the following account of what has actually been arranged: Dr. Nansen's desire is to leave Norway in February, 1892, but it is doubtful whether the special vessel which is being built will be ready by that time. Outside of Norway not a farthing has been contributed by anyone. The expedition is purely Norwegian, and will remain so. The Norwegian Government contribute 200,000 kroner; King Oscar, 20,000; twelve private individuals (all Norwegians except one Englishman, who has lived in Christiania for many years), 90,000; in all, 310,000, equal to $86,000. That, Dr. Nansen believes, will be sufficient. The ship, of course, is being specially constructed for the peculiar conditions which exist between the New Siberian islands and the Pole. Dr. Nansen will be accompanied by probably not more than eight young men, all as stalwart and strong in physique as himself, and all equally confident of success.—*Goldthwaite's Geographical Magazine, April, 1891.*

THE MEDITERRANEAN, PHYSICAL AND HISTORICAL.

(See Map.)

Address by LIEUTENANT-COLONEL SIR R. LAMBERT PLAYFAIR, K.C.M.G., H.M. Consul-General in Algeria, President of the Geographical Section of the British Association.

WHEN the unexpected honour was proposed to me of presiding over your deliberations, I felt some embarrassment as to the subject of my address. Geography as a science, and the necessity of encouraging a more systematic study of it, had been treated in an exhaustive manner during previous meetings. The splendid discoveries of Stanley and the prolonged experiences of Emin have been amply illustrated by the personal narrative of the former. The progress of geography during the past year has been fully detailed in the annual address of the President of the Royal Geographical Society in June last; so that it would be a vain and presumptuous endeavour for me to compress these subjects into the limits of an opening address. Closely connected with them are the magnificent experiments for opening out Africa which are being made by our merchant princes, amongst whom the name of Sir William Mackinnon stands pre-eminent, and by our missionary societies of various churches, all acting cordially in unison, and sinking, in the dark continent, the differences and heart-burnings which divide Christianity at home. I have thought it better, however, not to discuss matters so closely connected with political questions which have not yet passed into the realm of history.

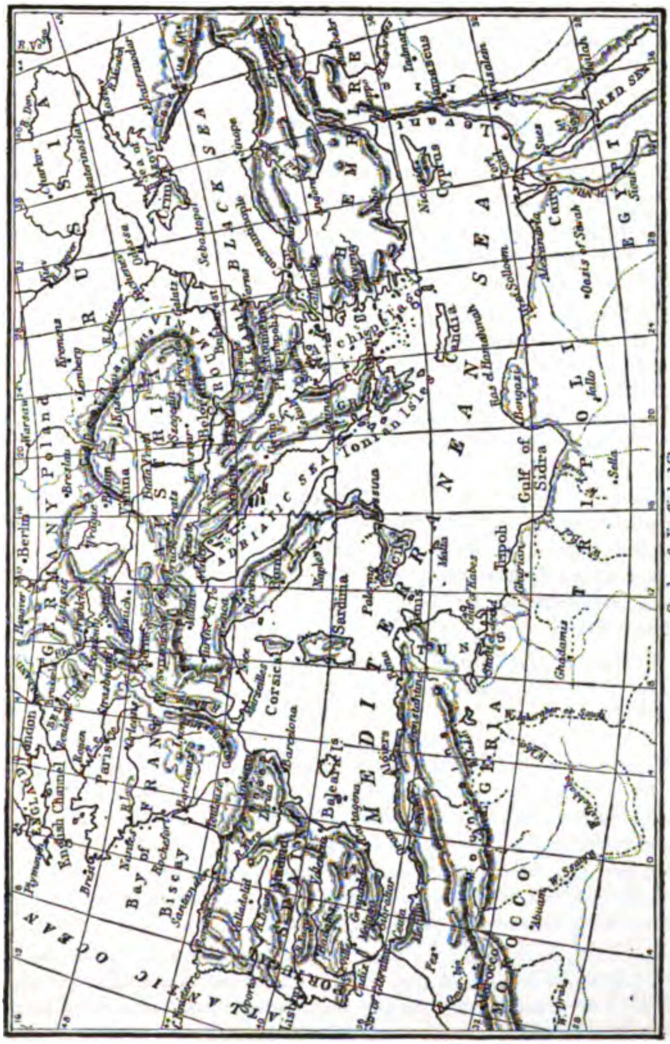
In my perplexity I applied for the advice of one of the most experienced geographers of our Society, whose reply brought comfort to my mind. He reminded me that it was generally the custom for presidents of sections to select subjects with which they were best acquainted, and added, "What more instructive and captivating subject could be wished than 'The Mediterranean, Physical and Historical?'"

For nearly a quarter of a century I have held an official position in Algeria, and it has been my constant delight to make myself acquainted with the islands and shores of the Mediterranean, in the hope of being able to facilitate the travels of my countrymen in that beautiful part of the world.

I cannot pretend to throw much new light on the subject, and I have written so often about it already that what I have to say may strike you as a twice-told tale; nevertheless, if you will permit me to descend from the elevated platform occupied by more learned predecessors, I should like to speak to you in a familiar manner of this "great sea," as it is called in sacred Scripture, the *Mare Internum* of the ancients, "our sea," *Mare nostrum*, of Pomponius Mela.

Its shores include about three million square miles of the richest country on the earth's surface, enjoying a climate where the extremes of temperature are unknown, and with every variety of scenery, but chiefly consisting of mountains and elevated plateaux. It is a well-defined region of many parts, all intimately connected with each other by their geographical character, their geological formation, their flora, fauna, and the physiognomy of the people who inhabit them. To this general statement there are two exceptions, namely, Palestine, which belongs rather to the tropical countries lying to the east of it, and so may be dismissed from our subject, and the Sahara, which stretches to the south of the Atlantic region—or region of the Atlas—but approaches the sea at the Syrtis, and again to the eastward of the Cyrenaica, and in which Egypt is merely a long oasis on either side of the Nile, The Mediterranean region is the emblem of fertility and the cradle of civilisation, while the Sahara—Egypt, of course, excepted—is the traditional panther's skin of sand, dotted here and there with oases, but always representing sterility and barbarism. The sea is in no sense, save a political one, the limit between them; it is a mere gulf, which, now bridged by steam, rather unites than separates the two shores. Civilisation never could have existed if this inland sea had not formed the junction between the surrounding continents, rendering the coasts of each easily accessible whilst modifying the climate of its shores.

THE MEDITERRANEAN.



Sketch map, by permission of Messrs. George Philip & Son, to illustrate the address of Sir Lambert Playfair.

The Atlas range is a mere continuation of the south of Europe. It is a long strip of mountain land, about 200 miles broad, covered with splendid forests, fertile valleys, and in some places arid steppes, stretching eastward, from the ocean to which it has given its name. The highest point is in Morocco, forming a pendant to th Sierra Nevada of Spain; thence it runs, gradually decreasing in height, through Algeria and Tunisia; it becomes interrupted in Tripoli; and it ends in the beautiful green hills of the Cyrenaica, which must not be confounded with the oases of the Sahara, but is an island detached from the eastern spurs of the Atlas, in the ocean of the desert.

In the eastern part the flora and fauna do not essentially differ from those of Italy; in the west they resemble those of Spain. One of the noblest of the Atlantic conifers (the *Abies pinsapo*) is found also in the Iberian peninsula, and nowhere else in the world, and the valuable alfa grass or esparto (*Stipa tenacissima*), from which a great part of our paper is now made, forms one of the principal articles of export from Spain, Portugal, Morocco, Algeria, Tunisia, and Tripoli. On both sides of the sea the former plant is found on the highest and most inaccessible mountains, amongst snows which last during the greater part of the year, and the latter from the sea level to an altitude of 5,000 feet, but in places where the heat and drought would kill any other plant, and in undulating land where water cannot lodge.

Of the 3,000 plants found in Algeria, by far the greater number are natives of Southern Europe, and less than 100 are peculiar to the Sahara. The macchie or maquis of Algeria in no way differs from that of Corsica, Sardinia, and other places. It consists of lentisk, arbutus, myrtle, cistus, tree-heath, and other Mediterranean shrubs. If we take the commonest plant found on the southern shores of the Mediterranean, the dwarf palm (*Chamærops humilis*), we see at once how intimately connected is the whole Mediterranean region, with the exception of the localities I have before indicated. This palm still grows spontaneously in the south of Spain and in some parts of Provence, in Corsica, Sardinia and the Tuscan Archipelago, in Calabria and the Ionian Islands, on the continent of Greece, and in several of the islands in the Levant, and it has only disappeared from other countries as the land has been brought under regular cultivation. On the other hand, it occurs neither in Palestine, Egypt, nor in the Sahara.

The presence of European birds may not prove much, but there are mammalia, fish, reptiles, and insects common to both sides of the Mediterranean. Some of the larger animals, such as the lion, panther, jackal, &c., have disappeared before the march of civilisation in the one continent, but have lingered, owing to Mohammedan barbarism, in the other. There is abundant evidence of the former existence of these and of the other large mammals which now characterise tropical Africa, in France, Germany, and Greece. It is probable that they only migrated to their present habitat after the upheaval of the great sea which in Eocene times stretched from the Atlantic to the Indian Ocean, making Southern Africa an island continent like Australia. The original fauna of Africa, of which the lemur is a distinctive type, is still preserved in Madagascar, which then formed part of it.

The fish fauna is naturally the most conclusive evidence as to the true line of separation between Europe and Africa. We find the trout in the Atlantic region and in all the snow-fed rivers falling into the Mediterranean; in Spain, Italy, Dalmatia; it occurs in Mount Olympus, in rivers of Asia Minor, and even in the Lebanon, but nowhere in Palestine south of that range, in Egypt, or in the Sahara. This fresh-water salmonoid is not exactly the same in all these localities, but is subject to considerable variation, sometimes amounting to specific distinction. Nevertheless it is a European type found in the Atlas, and it is not till we advance into the Sahara, at Tuggurt, that we come to a purely African form in the Chromidæ, which have a wide geographical distribution, being found everywhere between that place, the Nile, and Mozambique.

The presence of newts, tailed batrachians, in every country round the Mediterranean, except again in Palestine, Egypt, and the Sahara, is another example of the continuity of the Mediterranean fauna, even though the species are not the same throughout.

The Sahara is an immense zone of desert which commences on the shores of the Atlantic Ocean, between the Canaries and Cape de Verde, and traverses the whole of North Africa, Arabia, and Persia, as far as Central Asia. The Mediterranean portion of it may be said roughly to extend between the 15th and 30th degrees of north latitude.

This was popularly supposed to have been a vast inland sea in very recent times, but the theory was supported by geographical facts wrongly interpreted. It has been abundantly proved by the researches of travellers and geologists that such a sea was neither the cause nor the origin of the Libyan Desert.

Rainless and sterile regions of this nature are not peculiar to North Africa, but occur in two belts which go round the world in either hemisphere, at about similar distances north and south of the equator. These correspond in locality to the great inland drainage areas from which no water can be discharged into the ocean, and which occupy about one-fifth of the total land surface of the globe.

The African Sahara is by no means a uniform plain, but forms several distinct basins containing a considerable extent of what may almost be called mountain land. The Hoggar Mountains, in the centre of the Sahara, are 7,000 feet high, and are covered during three months with snow. The general average may be taken at 1,500. The physical character of the region is very varied. In some places, such as Tiout, Moghrar, Touat, and other oases in or bordering on Morocco, there are well-watered valleys, with fine scenery and almost European vegetation, where the fruits of the north flourish side by side with the palm tree. In others there are rivers like the Oued Guir, an affluent of the Niger, which the French soldiers, who saw it in 1870, compared to the Loire. Again, as in the bed of the Oued Rir, there is a subterranean river, which gives a sufficient supply of water to make a chain of rich and well-peopled oases equal in fertility to some of the finest portions of Algeria. The greater part of Sahara, however, is hard and undulating, cut up by dry watercourses, such as the Igharghar which descends to the Chott Melghigh, and almost entirely without animal or vegetable life.

About one-sixth of its extent consists of dunes of moving sand, a vast accumulation of detritus washed down from more northern and southern regions—perhaps during the glacial epoch—but with no indication of marine formation. These are difficult and even dangerous to traverse, but they are not entirely destitute of vegetation. Water is found at rare but well-known intervals, and there is an abundance of salsolaceous plants which serves as food for the camel. This sand is largely produced by wind action on the underlying rocks, and is not sterile in itself—it is only the want of water which makes it so. Wherever water does exist, or artesian wells are sunk, oases of great fertility never fail to follow.

Some parts of the Sahara are below the level of the sea, and here are formed what are called *chotts* or *sebkhas*, open depressions without any outlets, inundated by torrents from the southern slopes of the Atlas in winter and covered with a saline efflorescence in summer. This salt by no means proves the former existence of an inland sea. It is produced by the concentration of the natural salts, which exist in every variety of soil, washed down by winter rains, with which the unevaporated residue of water becomes saturated.

Sometimes the drainage, instead of flooding open spaces and forming chotts, finds its way through the permeable sand till it meets impermeable strata below it, thus forming vast subterranean reservoirs where the artesian well daily works as great miracles as did Moses's rod of yore at Meribah. I have seen a column of water thrown up into the air equal to 1,300 metres per diem, a quantity sufficient to redeem 1,800 acres of land from sterility and to irrigate 60,000 palm trees. This seems to be the true solution of the problem of an inland sea—a sea of verdure and fertility caused by the multiplication of artesian wells, which never fail to bring riches and prosperity in their train.

The climate of the Sahara is quite different from that of what I have called the Mediterranean region, where periodical rains divide the year into two seasons. Here, in many places, years elapse without a single shower; there is no refreshing dew at night, and the winds are robbed of their moisture by the immense continental extents over which they blow. There can be no doubt that it is to these meteorological, and not to geological, causes that the Sahara owes its existence.

Reclus divides the Mediterranean into two basins, which, in memory of their history, he calls the Phœnician and the Carthaginian, or the Greek and Roman seas, more generally known to us as the Eastern and Western Basins, separated by the island of Sicily.

If we examine the submarine map of the Mediterranean, we see that it must at one time have consisted of two enclosed or inland basins, like the Dead Sea. The western one is separated from the Atlantic by the Strait of Gibraltar, a shallow ridge, the deepest part of which is at its eastern extremity, averaging about 300 fathoms; while on the west, bounded by a line from Cape Spartel to Trafalgar, it varies from 50 to 200 fathoms. Fifty miles to the west of the Strait the bottom suddenly sinks down to the depths of the Atlantic, while to the east it descends to the general level of the Mediterranean, from one to two thousand fathoms.

The Western is separated from the Eastern Basin by the isthmus, which extends between Cape Bon, in Tunisia, and Sicily, known as the Adventure Bank, on which there is not more than from 30 to 250 fathoms. The depth between Italy and Sicily is insignificant, and Malta is a continuation of the latter, being only separated from it by a shallow patch of from 50 to 100 fathoms; while to the east and west of this bank the depth of the sea is very great. These shallows cut off the two basins from all but superficial communication.

The configuration of the bottom shows that the whole of this strait was at one time continuous land, affording free communication for land animals between Africa and Europe. The Palæontological evidence of this is quite conclusive. In the caves and fissures of Malta, amongst river detritus, are found three species of fossil elephants, a hippopotamus, a gigantic dormouse, and other animals which could never have lived in so small an island. In Sicily, remains of the existing elephant have been found, as well as the *Elephas antiquus*, and two species of hippopotamus, while nearly all these and many other animals of African type have been found in the pliocene deposits and caverns of the Atlantic region.

The rapidity with which such a transformation might have occurred can be judged by the well-known instance of Graham's Shoal, between Sicily and the island of Pantellaria. This, owing to volcanic agency, actually rose above the water in 1832, and for a few weeks had an area of 3,240 feet in circumference and a height of 107 feet.

The submersion of this isthmus no doubt occurred when the waters of the Atlantic were introduced through the Strait of Gibraltar. The rainfall over the entire area of the Mediterranean is certainly not more than 30 inches, while the evaporation is at least twice as great; therefore, were the Strait to be once more closed, and were there no other agency for making good this deficiency, the level of the Mediterranean would sink again till its basins became restricted to an area no larger than might be necessary to equalise the amount of evaporation and precipitation. Thus not only would the strait between Sicily and Africa be again laid dry, but the Adriatic and Ægean Seas also, and a great part of the Western Basin.

The entire area of the Mediterranean and Black Seas has been estimated at upwards of a million square miles, and the volume of the rivers which are discharged into them at 226 cubic miles. All this and much more is evaporated annually. There are two constant currents passing through the Strait of Gibraltar, superimposed on each other. The upper and most copious one flows in from the Atlantic at a rate of nearly three miles an hour, or 140,000 cubic metres per second, and supplies the difference between the rainfall and evaporation, while an undercurrent of warmer water, which has undergone concentration by evaporation, is continually flowing out at about half the above rate of movement, getting rid of the excess of salinity, even thus, however, leaving the Mediterranean salter than any other part of the ocean except the Red Sea.

A similar phenomenon occurs at the eastern end, where the fresher water of the Black Sea flows as a surface current through the Dardanelles, and the salter water of the Mediterranean pours in below it.

The general temperature of the Mediterranean from a depth of 50 fathoms down to the bottom is almost constantly 56°, whatever may be its surface elevation. This is a greater contrast to that of the Atlantic, which at a similar depth is at least 8° colder, and which at 1,000 fathoms sinks to 40°.

This fact was of the greatest utility to Dr. Carpenter in connection with his investigations regarding currents through the Strait, enabling him to distinguish with precision between Atlantic and Mediterranean water.

For all practical purposes the Mediterranean may be accepted as being, what it is popularly supposed to be, a tideless sea, but it is not so in reality. In many places there is a distinct rise and fall, though this is more frequently due to winds and currents than to lunar attraction. At Venice there is a rise of from one to two feet in spring tides, according to the prevalence of winds up or down the Adriatic, but in that sea itself the tides are so weak that they can hardly be recognised, except during the prevalence of the Bora, our old friend *Boreas*, which generally raises a surcharge along the coast of Italy. In many straits and narrow arms of the sea there is a periodical flux and reflux, but the only place where tidal influence, properly so called, is unmistakably observed is in the Lesser Syrtis, or Gulf of Gabes. There the tide runs at the rate of two or three knots an hour, and the rise and fall varies from three to eight feet. It is most marked and regular at Djerba, the Homeric island of the Lotophagi. One must be careful in landing there in a boat, so as not to be left high and dry a mile or two from the shore. Perhaps the companions of Ulysses were caught by the receding tide, and it was not only a banquet of dates, the "honey-sweet fruit of the lotus, or the potent wine which is made from it, which made them forgetful of their homeward way."

The Gulf of Gabes naturally calls to mind the proposals which were made a few years ago for inundating the Sahara, and so restoring to the Atlantic region the insular condition which it is alleged to have had in prehistoric times. I will not allude to the English project for introducing the waters of the Atlantic from the west coast of Africa; that does not belong to my subject. The French scheme advocated by Commandant Roudaire, and supported by M. de Lesseps, was quite as visionary and impracticable.

To the south of Algeria and Tunis there exists a great depression stretching westward from the Gulf of Gabes to a distance of about 235 miles, in which are several *chotts* or salt lakes, sometimes only marshes, and in many places covered with a saline crust strong enough to bear the passage of camels. Commandant Roudaire proposed to cut through the isthmuses which separated the various chotts, and so prepare their basins to receive the waters of the Mediterranean. This done, he intended to introduce the sea by a canal, which should have a depth of one metre below low-water level.

This scheme was based on the assumption that the basin of the chotts had been an inland sea within historic times; that, little by little, owing to the difference between the quantity of water which entered and the amount of evaporation and absorption, this interior sea had disappeared, leaving the chotts as an evidence of the former condition of things; that, in fact, this was none other than the celebrated Lake Triton, the position of which has always been a puzzle to geographers.

This theory, however, is untenable; the isthmus of Gabes is not a mere sandbank. There is a band of rock between the sea and the basin of the chotts, through which the former never could have penetrated in modern times. It is much more probable that Lake Triton was the large bight between the island of Djerba and the mainland on the shores of which are the ruins of the ancient city of Meninx, which, to judge by the abundance of Greek marble found there, must have carried on an important commerce with the Levant.

The scheme has now been entirely abandoned. Nothing but the mania for cutting through isthmuses all over the world which followed the brilliant success achieved at Suez can explain its having been started at all. Of course, no mere mechanical operation is impossible in these days, but the mind refuses to realise the possibility of vessels circulating in a region which produces nothing, or that so small a sheet of water in the immensity of the Sahara could have any appreciable effect in modifying the climate of its shores.

The Eastern Basin is much more indented and cut up into separate seas than the Western one. It was therefore better adapted for the commencement of commerce and navigation. Its high mountains were landmarks for the unpractised sailor, and its numerous islands and harbours afforded shelter for his frail barque, and so facilitated communication between one point and another.

The advance of civilisation naturally took place along the axis of this sea, Phœnicia, Greece, and Italy being successively the great nurseries of human knowledge and progress. Phœnicia had the glory of opening out the path of ancient commerce, for its position in the Levant gave it a natural command of the Mediterranean, and its people sought the profits of trade from every nation which had a seaboard on the three continents washed by this sea. Phœnicia was already a nation before the Jews entered the Promised Land, and when they did so they carried on inland traffic as middlemen to the Phœnicians. Many of the commercial centres on the shores of the Mediterranean were founded before Greece and Rome acquired importance in history. Homer refers to them as daring traders nearly a thousand years before the Christian era.

For many centuries the commerce of the world was limited to the Mediterranean, and when it extended in the direction of the East it was the merchants of the Adriatic, of Genoa, and of Pisa who brought the merchandise of India, at an enormous cost, to the Mediterranean by land, and who monopolised the carrying trade by sea. It was thus that the elephant trade of India, the caravan traffic through Babylon and Palmyra, as well as the Arab *kafilehs*, became united with the occidental commerce of the Mediterranean.

As civilisation and commerce extended westwards, mariners began to overcome their dread of the vast solitudes of the ocean beyond the Pillars of Hercules, and the discovery of America by Columbus, and the circumnavigation of Africa by the Portuguese, changed entirely the current of trade as well as increased its magnitude, and so relegated the Mediterranean, which had hitherto been the central sea of human intercourse, to a position of secondary importance.

Time will not permit me to enter into further details regarding the physical geography of this region, and its history is a subject so vast that a few episodes of it are all that I can possibly attempt. It is intimately connected with that of every other country in the world, and here were successively evolved all the great dramas of the past and some of the most important events of less distant ages.

As I have already said, long before the rise of Greece and Rome its shores and islands were the seat of an advanced civilisation. Phœnicia had sent out her pacific colonies to the remotest parts, and not insignificant vestiges of their handicraft still exist to excite our wonder and admiration. We have the megalithic temples of Malta, sacred to the worship of Baal, the generative god, and Ashtoreth, the conceptive goddess, of the universe. The three thousand nurhagi of Sardinia, round towers of admirable masonry, intended probably for defence in case of sudden attack, and the so-called giant graves, were as great a mystery to classical authors as they are to us at the present day. Minorca has its talayots, tumuli somewhat analogous to, but of ruder construction than, the nurhagi, more than 200 groups of which exist in various parts of the island. With these are associated subordinate constructions intended for worship—altars composed of two immense monoliths, erected in the form of a T; sacred enclosures and megalithic habitations. One type of talayot is especially remarkable, of better masonry than the others and exactly resembling inverted boats. One is tempted to believe that the Phœnicians had in view the grass habitations or *mapalia* of the Numidians described by Sallust, and had endeavoured to reproduce them in stone: *Oblonga, incurvis lateribus tecta, quasi navium carinæ sunt.*

For a long time the Phœnicians had no rivals in navigation, but subsequently the Greeks—especially the Phocians—established colonies in the Western Mediterranean, in Spain, Corsica, Sardinia, Malta, and the South of France, through the means of which they propagated not only their commerce but their arts, literature, and ideas. They introduced many valuable plants, such as the olive, thereby modifying profoundly the agriculture of the countries in which they settled. They have even left traces of their blood, and it is no doubt to this that the women of Provence owe the classical beauty of their features.

But they were eclipsed by their successors. The empire of Alexander opened out a road to India, in which, indeed, the Phœnicians had preceded him, and introduced the produce of the East into the Mediterranean, while the Tyrian colony of Carthage became the capital of another vast empire, which, from its situation, midway between the Levant and the Atlantic Ocean, enabled it to command the Mediterranean traffic.

The Carthaginians at one time ruled over territory extending along the coast from Cyrene to Numidia, besides having a considerable influence over the interior of the continent, so that the name of Africa, given to their own dominions, was gradually applied to a whole quarter of the globe. The ruling passion with the Carthaginians was the love of gain, not patriotism, and their wars were largely fought with mercenaries. It was the excellence of her civil constitution which, according to Aristotle, kept in cohesion for centuries her straggling possessions. A country feebly patriotic, which entrusts her defence to foreigners, has the seeds of inevitable decay, which ripened in her struggle with Rome, despite the warlike genius of Hamilkar and the devotion of the magnanimous Hannibal. The gloomy and cruel religion of Carthage, with its human sacrifices to Moloch and its worship of Baal under the name of Melcarth, led to a criminal code of Draconic severity and alienated it from surrounding nations. When the struggle with Rome began, Carthage had no friends. The first Punic War was a contest for the possession of Sicily, whose prosperity is even now attested by the splendour of its Hellenic monuments. When Sicily was lost by the Carthaginians, so also was the dominion of the sea, which hitherto had been uncontested. The second Punic War resulted in the utter prostration of Carthage and the loss of all her possessions out of Africa, and in 201 B.C., when this war was ended, 552 years after the foundation of the city, Rome was mistress of the world.

The destruction of Carthage after the third Punic War was a heavy blow to Mediterranean commerce. It was easy for Cato to utter his stern "*Delenda est Carthago:*" destruction is easy, but construction is vastly more difficult. Although Augustus, in his might, built a new Carthage near the site of the old city, he could never attract again the trade of the Mediterranean, which had been diverted into other channels. Roman supremacy was unfavourable to the growth of commerce, because, though she allowed unrestricted trade throughout her vast empire, and greatly improved internal communications in the subjugated countries, Rome itself absorbed the greater part of the wealth, and did not produce any commodities in return for its immense consumption, therefore Mediterranean commerce did not thrive under the Roman rule. The conquest of Carthage, Greece, Egypt, and the East, poured in riches to Rome, and dispensed for a time with the needs of productive industry, but formed no enduring basis of prosperity.

It is only in relation to the Mediterranean that I can refer to Roman history, but I must allude to the interesting episode in the life of Diocletian, who, after an anxious reign of twenty-one years in the eastern division of the empire, abdicated at Nicomedia and retired to his native province of Illyria. He spent the rest of his life in rural pleasures and horticulture at Salona, near which he built that splendid palace, within the walls of which subsequently arose the modern city of Spalato. Nothing more interesting exists on the shores of the Mediterranean than this extraordinary edifice, perhaps the largest that ever arose at the bidding of a single man; not only vast and beautiful, but marking one of the most important epochs in the history of architecture.

Though now obstructed with a mass of narrow, tortuous streets, its salient features are distinctly visible. The great temple, probably the mausoleum of the founder, has become the cathedral, and after the Pantheon at Rome there is no finer specimen of a heathen temple turned into a Christian church. Strange it is that the tomb of him whose reign was marked by such unrelenting persecution of the Christians should have been accepted as the model of those baptisteries so commonly constructed in the following centuries.

Of Diocletian's Salona, one of the chief cities of the Roman world, but little now remains save traces of the long irregular wall. Recent excavations have brought to light much that is interesting, but all of the Christian epoch, such as a large basilica which had been used as a necropolis, and a baptistry, one of those copied from the temple of Spalato, on the Mosaic payment of which can still be read the text, *Sicut cervus desiderat fontem aquarum ita anima mea ad te Deus.*

The final partition of the Roman empire took place in 365. Forty years later the barbarians of the North began to invade Italy and the South of Europe, and in 429 Genseric, at the head of his Vandal hordes, crossed over into Africa from Andalusia, a province which still bears their name, devastating the country as far as the Cyrenaica. He subsequently annexed the Balearic Islands, Corsica and Sardinia, ravaged the coasts of Italy and Sicily, and even of Greece and Illyria, but the most memorable of his exploits was the unresisted sack of Rome, whence he returned to Africa laden with treasure, and bearing the Empress Eudoxia a captive in his train.

The degenerate emperors of the West were powerless to avenge this insult, but Byzantium, though at this time sinking to decay, did make a futile attempt to attack the Vandal monarch in his African stronghold. It was not, however, till 533, in the reign of Justinian, when the successors of Genseric had fallen into luxurious habits, and had lost the rough valour of their ancestors, that Belisarius was able to break their power and take their last king a prisoner to Constantinople. The Vandal domination in Africa was destroyed, but that of the Byzantines was never thoroughly consolidated. It rested not on its own strength, but on the weakness of its enemies, and it was quite unable to cope with the next great wave of invasion which swept over the land, perhaps the most extraordinary event in the world's history, save only the introduction of Christianity.

In 647, twenty-seven years after the Hedjira of Mohammed, Abdulla ibn Saad started from Egypt for the conquest of Africa with an army of 40,000 men.

The expedition had two determining causes—the hope of plunder and the desire to promulgate the religion of El Islam. The sands and scorching heat of the desert, which had nearly proved fatal to the army of Cato, were no bar to the hardy Arabians and their enduring camels. The march to Tripoli was a fatiguing one, but it was successfully accomplished. The invaders did not exhaust their force in a vain effort to reduce its fortifications, but swept on over the Syrtic desert and north to the province of Africa, where, near the splendid city of Suffetula, a great battle was fought between them and the army of the Exarch Gregorius, in which the Christians were signally defeated, their leader killed, and his daughter allotted to Ibn ez-Zobar, who had slain her father.

Not only did the victorious Moslems overrun North Africa, but soon they had powerful fleets at sea, which dominated the entire Mediterranean, and the emperors of the East had enough to do to protect their own capitals.

Egypt, Syria, Spain, Provence, and the islands of the Mediterranean successively fell to their arms, and until they were checked at the Pyrenees by Charles Martell it seemed at one time as if the whole of Southern Europe would have been compelled to submit to the disciples of the new religion. Violent, implacable, and irresistible at the moment of conquest, the Arabs were not unjust or hard masters in countries which submitted to their conditions. Every endeavour was, of course, made to proselytise, but Christians were allowed to preserve their religion on payment of a tax, and even popes were in the habit of entering into friendly relations with the invaders. The church of St. Cyprian and St. Augustine, with its 500 sees, was indeed expunged, but five centuries after the passage of the Mohammedan army from Egypt to the Atlantic a remnant of it still existed. It was not till the 12th century that the religion and language of Rome became utterly extinguished.

The Arabs introduced a high state of civilisation into the countries where they settled. Their architecture is the wonder and admiration of the world at the present day; their irrigational works in Spain have never been improved upon; they fostered literature and the arts of peace, and introduced a system of agriculture far superior to what existed before their arrival.

Commerce discouraged by the Romans, was highly honoured by the Arabs, and during their rule the Mediterranean recovered the trade which it possessed in the time of the Phœnicians and Carthaginians. It penetrated into the Indian Archipelago and China ; it travelled westward to the Niger, and to the east as far as Madagascar, and the great trade route of the Mediterranean was once more developed.

The power and prosperity of the Arabs culminated in the ninth century, when Sicily fell to their arms. It was not, however, very long before their empire began to be undermined by dissensions. The temporal and spiritual authority of the Ommiade Khalifs, which extended from Sind to Spain, and from the Oxus to Yemen, was overthrown by the Abbasides in the year 132 of the Hedjira, A.D. 750. Seven years later Spain detached itself from the Abbaside empire, a new caliphate was established at Cordova, and hereditary monarchies began to spring up in other Mohammedan countries.

The Carlovingian empire gave an impulse to the maritime power of the south of Europe, and in the Adriatic the fleets of Venice and Ragusa monopolised the traffic of the Levant. The merchants of the latter noble little republic penetrated even to our shores, and Shakspere has made the Argosy or Ragusie a household word in our language.

During the eleventh century the Christian Powers were no longer content to resist the Mohammedans; they began to turn their arms against them. If the latter ravaged some of the fairest parts of Europe, the Christians began to take brilliant revenge.

The Mohammedans were driven ont of Corsica, Sardinia, Sicily, and the Balearic Islands, but it was not till 1492 that they had finally to abandon Europe, after the conquest of Granada by Ferdinand and Isabella.

About the middle of the eleventh century an event took place which profoundly modified the condition of the Mohammedan world. The Caliph Mostansir let loose a horde of nomad Arabs, who, starting from Egypt, spread over the whole of North Africa, carrying destruction and blood wherever they passed, thus laying the foundation for the subsequent state of anarchy which rendered possible the interference of the Turks.

English commercial intercourse with the Mediterranean was not unknown even from the time of the Crusade, but it does not appear to have been carried on by means of our own vessels till the beginning of the sixteenth century. In 1522 it was so great that Henry VIII. appointed a Cretan merchant, Censio de Balthazari, to be "Master, governor, protector, and consul of all and singular the merchants and others his lieges and subjects within the port, island, and country of Crete or Candia." This is the very first English consul known to history, but the first of English birth was my own predecessor in office, Master John Tipton, who, after having acted at Algiers during several years, in unofficial character, probably elected by the merchants themselves to protect their interests, was duly appointed consul by Sir William Harebone, ambassador at Constantinople in 1585, and received just such an *exequatur* from the Porte as has been issued to every consul since by the government of the country in which he resides.

Piracy has always been the scourge of the Mediterranean, but we are too apt to associate its horrors entirely with the Moors and Turks. The evil had existed from the earliest ages. Even before the Roman conquest of Dalmatia the Illyrians were the general enemies of the Adriatic. Africa under the Vandal reign was a nest of the fiercest pirates. The Venetian chronicles are full of complaints or the ravages of the corsairs of Ancona; and there is no other name but piracy for such acts of the Genoese as the unprovoked pillage of Tripoli by Ardrea Doria in 1535. To form a just idea of the corsairs of the past, it is well to remember that commerce and piracy were often synonymous terms, even among the English, up to the reign of Elizabeth. Listen to the description given by the pious Cavendish of his commercial circumnavigation of the globe: "It hath pleased Almighty God to suffer me to circumpass the whole globe of the world. . . . I navigated along the coast of

Chili, Peru, and New Spain, where I made great spoils. All the villages and towns that ever I landed at I burned and spoiled, and had I not been discovered upon the coast I had taken a great quantity of treasure," and so he concludes, "the Lord be praised for all His mercies!"

Sir William Monson, when called upon by James I. to propose a scheme for an attack on Algiers, recommended that all the maritime powers of Europe should contribute towards the expense, and participate in the gains by the sale of Moors and Turks as slaves.

After the discovery of America and the expulsion of the Moors from Spain, piracy developed to an extraordinary extent. The audacity of the Barbary corsairs seems incredible at the present day. They landed on the shores and islands of the Mediterranean, and even extended their ravages to Great Britain, carrying off all the inhabitants whom they could seize into the most wretched slavery. The most formidable of these piratical states was Algiers, a military oligarchy, consisting of a body of janissaries, recruited by adventurers from the Levant, the outcasts of the Mohammedan world, criminals and renegades from every nation in Europe. They elected their own ruler or Dey, who exercised despotic sway, tempered by frequent assassination. They oppressed without mercy the natives of the country, accumulated vast riches, had immense numbers of Christian slaves, and kept all Europe in a state bordering on subjection by the terror which they inspired. Nothing is sadder or more inexplicable than the shameful manner in which this state of things was accepted by civilised nations. Many futile attempts were made during successive centuries to humble their arrogance, but it only increased by every manifestation of the powerlessness of Europe to restrain it. It was reserved for our own countryman, Lord Exmouth, by his brilliant victory in 1816, for ever to put an end to piracy and Christian slavery in the Mediterranean. His work, however, was left incomplete, for though he destroyed the navy of the Algerines, and so rendered them powerless for evil on the seas, they were far from being humbled. They continued to slight their treaties, and to subject even the agents of powerful nations to contumely and injustice. The French took the only means possible to destroy this nest of ruffians, by the almost unresisted occupation of Algiers and the deportation of its Turkish aristocracy.

They found the whole country in the possession of a hostile people, some of whom had never been subdued since the fall of the Roman empire, and the world owes France no small debt of gratitude for having transformed what was a savage and almost uncultivated country into one of the richest as well as the most beautiful in the basin of the Mediterranean.

What has been accomplished in Algeria is being effected in Tunisia. The treaty of the Kasr-es-Saeed, which established a French protectorate there, and the military occupation of the regency, were about as high-handed and unjustifiable acts as are recorded in history; but there can be no possible doubt regarding the important work of civilisation and improvement that has resulted from them. European courts of justice have been established all over the country. The exports and imports have increased from 23 to 51 millions of francs, the revenue from 6 to 19 millions, without the imposition of a single new tax, and nearly half a million per annum is being spent on education.

Sooner or later the same thing must happen in the rest of North Africa, though at present international jealousies retard this desirable consummation. It seems hard to condemn such fair countries to continued barbarism, in the interest of tyrants who misgovern and oppress their people. The day cannot be far off when the whole southern shores of the Mediterranean will enjoy the same prosperity and civilisation as the northern coast, and when the deserts, which are the result of misgovernment and neglect, will assume the fertility arising from security and industry, and will again blossom as the rose.

It cannot be said that any part of the Mediterranean basin is still unknown, if we except the empire of Morocco. But even that country has been traversed in almost every direction during the past twenty years, and its geography and natural history have been illustrated by men of the greatest eminence—such as Gerhard Rohlfs, Monsieur Tissot, Sir Joseph Hooker, the Vicomte de Foucauld, Joseph Thomson, and numerous other travellers. The least known portion, at least on the Mediterranean coast, is the Riff country, the inhospitality of whose inhabitants has given the word "ruffian" to the English language. Even that has been penetrated by De Foucauld, disguised as a Jew, and the record of his exploration is one of the most brilliant contributions to the geography of the country which has hitherto been made.

Although, therefore, but little remains to be done in the way of actual exploration, there are many by-ways of travel comparatively little known to that class of the community with which I have so much sympathy, the ordinary British tourist. These flock every year in hundreds to Algeria and Tunis, but few of them visit the splendid Roman remains in the interior of those countries. The Cyrenaica is not so easily accessible, and I doubt whether any Englishmen have travelled in it since the exploration of Smith and Porcher in 1861.

Cyrene almost rivalled Carthage in commercial importance. The Hellenic ruins still existing bear witness to the splendour of its five great cities. It was the birthplace of many distinguished people, and among its hills and fountains were located some of the most interesting scenes in mythology, such as the Gardens of the Hesperides and the "Silent, dull, forgetful waters of Lethe."

This peninsula is only separated by a narrow strait from Greece, whence it was originally colonised. There, and indeed all over the eastern basin of the Mediterranean, are many little-trodden routes; but the subject is too extensive. I am reluctantly compelled to restrict my remarks to the western half.

The south of Italy is more frequently traversed and less travelled in than any part of that country. Of the thousands who yearly embark or disembark at Brindisi, few ever visit the Land of Manfred. Otranto is only known to them from the fanciful descriptions in Horace Walpole's romance. The general public in this country is quite ignorant of what is going on at Taranto, and of the great arsenal and dockyard which Italy is constructing in the Mare Piccolo, an inland sea containing more than 1,000 acres of anchorage for the largest ironclads afloat, yet with an entrance so narrow that it is spanned by a revolving bridge. Even the Adriatic, though traversed daily by steamers of the Austrian Lloyd's Company, is not a highway of travel, yet where is it possible to find so many places of interest within the short space of a week's voyage, between Corfu and Trieste, as along the Dalmatian and Istrian shores, and among the islands that fringe the former, where it is difficult to realise that one is at sea at all, and not on some great inland lake?

There is the Bocche di Cattaro, a vast rent made by the Adriatic among the mountains, where the sea flows round their spurs in a series of canals, bays, and lakes of surpassing beauty. The city of Cattaro itself, the gateway of Montenegro, with its picturesque Venetian fortress, nestling at the foot of the black mountain; Ragusa, the Roman successor of the Hellenic Epidaurus, Queen of the Southern Adriatic, battling with the waves on her rock-bound peninsula, the one spot in all that sea which never submitted either to Venice or the Turk, and for centuries resisting the barbarians on every side, absolutely unique as a mediæval fortified town, and worthy to have given her name to the argosies she sent forth; Spalato, the grandest of Roman monuments; Lissa, colonised by Dionysius of Syracuse, and memorable to us as having been a British naval station from 1812 to 1814, while the French held Dalmatia; Zara, the capital, famous for its siege by the Crusaders, interesting from an ecclesiological point of view, and venerated as the last resting-place of St. Simeon, the prophet of the *Nunc dimittis*; Parenza, with its great Basilica; Pola, with its noble harbour, whence Belisarius sailed forth, now the chief naval port of the Austrian empire, with its Roman amphitheatre and graceful triumphal arches; besides many other places of almost equal interest. Still further west are Corsica, Sardinia, and the Balearic Islands, all easily accessible from the coasts of France, Italy, and Spain. These ports are constantly visited by mail steamers and private yachts, yet they are but little explored in the interior.

I am tempted to linger a little over one of the places I have just mentioned, and to devote more time to a physical and historical description of Corsica than I can spare for the Mediterranean generally. It is replete with all that makes travel delightful—unequalled scenery, a brilliant climate, historical associations, and the study of a race of men who still retain their national peculiarities. The facilities for travelling are as great as can be fairly expected; roads such as none but the French seem able to make, winding along steep coasts and over high mountains, plunging into the depths of shady valleys and amongst dark forests in search of what is so dear to a French engineer's heart, a uniform gradient, and metalled with granite so hard that in the driest weather they are free from dust. I may add that I never failed to find sufficiently good accommodation and a kindly reception in the smallest and most remote villages.

Corsica has been compared in shape to a closed hand with the index finger extended, the latter being the promontory, called Cap Corse. The island is traversed in its whole length by a chain of high mountains, the general direction of which is north and south, dividing it into two parts of nearly equal extent. Placed, as it is, in the centre of the Western Mediterranean, between the Alps and the Atlas, and with so great inequalities of surface, it presents an epitome of the whole region from the warm sea-level to the Alpine character of the interior, where the mountains rise to a height of nearly 9,000 feet, and are clothed in snow during the greater part of the year.

All the western coast, and more than two-thirds of the whole island, are of granitic formation. The central range throws out spurs towards the sea, forming on the western side numerous bays of considerable size and depth. Nothing can exceed the grandeur of the scenery on the coast, which culminates in the celebrated Calanches de Piana, a succession of stupendous granite rocks worn and hollowed out in the most fantastic manner, fearful in their forms but soft and lovely in their colouring. There are many similar rocks throughout the island, such as the Calanches d'Evisa, the Fourches d'Asinao, and the Gorge of Inzeca, where a river flows between great cliffs and amongst boulders of green serpentine, a sight never to be forgotten.

The eastern side of the island consists of primary rocks, more or less easily disintegrated, the detritus being washed down by rains, so as to form the low plains bordering that coast. As the rivers force their way through them with difficulty, marshes and lagoons are created. These are hotbeds of malarious fever in summer, dangerous even for the natives, who migrate to the hills at that season.

The forests, the great glory of the island, consist chiefly of oak, beech, birch, and the *Pinus laricio*, indigenous to Corsica, and the monarch of European conifers, which rises as straight as an arrow sometimes to a height of 120 or 150 feet.

The Castagniccia, or country of the chestnut, is an extensive and very beautiful district, especially when the trees are in full leaf. The fruit is more useful to the people who inhabit the district than even the date to the Arab. He has to cultivate his palm trees laboriously, irrigate them in summer, and pick the fruit with the greatest care. The chestnut demands no such attention; it grows spontaneously, requires no cultivation, and the fruit falls of itself when sufficiently ripe. It is the staple food of the people, who eat it in every form, even giving it to their cattle instead of grain, while the sale of the surplus furnishes them with the other necessaries of life.

After the forests the most pleasing feature in the island, and covering more than half its surface, is the macchie, or brushwood, before mentioned, spreading its delicious perfume through the air and lighting up the landscape with a blaze of colour. There is also a constant succession of wild flowers, liliaceous plants, orchids, cyclamen, and many others. In one pine wood I saw the ground carpeted with violets and primroses, while ferns, from the common bracken to the noble *Osmunda regalis*, are found everywhere.

The principal towns are Ajaccio on the south-west, a well-known winter station, the capital of the island, full of memories and memorials of Napoleon; Bastia to the north-east, the commercial capital; Calvi to the north-west, a picturesque stronghold rising high above the sea, and dominating the surrounding country. The last is one of the few places that were always faithful to the Genoese cause, and it still bears over the entrance gate the inscription *Civitas Calvi semper fidelis.* It made a desperate resistance to the English in 1794 under Hood and Nelson, who reduced it almost to a heap of ruins before it surrendered. Nelson lost his eye in the engagement. A local antiquary has tried to prove that Columbus was born here, of Genoese parents, though he left at an early age for Genoa.

Corte, in the interior of the island, the ancient feudal capital, was the chief seat of Paoli's government, as well as the headquarters of the short-lived English administration under Sir Gilbert Elliot. It is situated at the confluence of two rivers, the Restonica and the Tavignano, which descend to the plains through a series of magnificent gorges. High above the town, perched on the summit of a rock, is the picturesque citadel built in the beginning of the fifteenth century.

In the extreme south is Bonifacio, another ancient fortress, not only strange and beautiful in itself, but commanding fine views from its ramparts of Sardinia and the numerous islands on both sides of the strait.

Cargese, twenty-eight miles north of Ajaccio, is exceptionally interesting. In 1676 an emigration of about 1,000 Greeks from Maina, in the Morea, wearied with Turkish oppression, took place to Genoa, whence they were sent to Corsica. A second emigration of 400 started to join them in the following year, but they were overtaken by the Turkish fleet and massacred. The prosperity of the small colony was not of long duration, because, when the insurrection in Corsica against the Genoese broke out, the Greeks, out of gratitude to their protectors, refused to join in it. In consequence, their villages were destroyed, their lands confiscated, and their flocks driven away. They fled for refuge to Ajaccio, and there remained till the advent of the French. It was one of the first acts of Comte Marbeuf, on assuming the government of the island, to reinstate them in a new domain, and he it was who built the present town of Cargese. The inhabitants, though in full communion with the Church of Rome, still retain their Greek Liturgy, and to some extent their language, and live on the most cordial terms with their Latin neighbours.

The vendetta has always been one of the characteristic customs of Corsica, although prevailing more in some parts of the island than in others. Such feuds have been pursued with inveterate pertinacity, frequently involving whole families from one generation to another. The custom originated in times when Genoese justice was venal and corrupt, and men had to take the honour of their families into their own keeping. After having accomplished their vendetta, the "bandits," as they are called, are accustomed to take refuge in the macchie, but they are never to be confounded with robbers, and there is no instance of strangers being molested by them.

Corsica has an important ancient history, but time will not permit me to enter into this subject in any detail. One episode, however, is especially interesting. Seneca passed eight years here in exile. A tower is pointed out on the west coast of Cap Corse which is said to have served as his prison. Even the glorious views of sea and land which it commands could not compensate him for compulsory banishment from the fertile plains of Italy. He may therefore be pardoned for his petulant injustice to the physical geography of the island when he penned his celebrated complaint, thus rendered by Boswell:—

"Corsica, whom rocks terrific bound,
Where Nature spreads her wildest desert round,
In vain revolving seasons cheer thy soil,
Nor rip'ning fruits nor waving harvests smile;
Nor blooms the olive mid the winter drear—
The votive olive to Minerva dear.
See Spring returning spreads her milder reign!
Yet shoots no herb, no verdure clothes the plain,
No cool springs to quench the traveller's thirst
From thy parched hills in grateful murmurs burst.
Nor, hapless Isle! thy barren shores around,
Is wholesome food, fair Ceres' bounty, found.
Nor even the last sad gift the wretched claim,
The pile funereal and the sacred flame.
Naught here, alas! surrounding seas enclose,
Naught but an exile and an exile's woes."

Nor is this the place even to summarise the modern history of the island, though nothing can be more interesting than the story of the Pisan domination, the long and tyrannical rule of the Genoese, the struggle of the islanders during four centuries to regain their independence, the mock kingdom of Theodore, the wise rule of Pasquale Paoli, the unfortunate English occupation, and the subsequent conquest of the island by France.

I have endeavoured to sketch, necessarily in a very imperfect manner, the physical character and history of the Mediterranean, to show how the commerce of the world originated in a small maritime state at its eastern extremity; how it gradually advanced westward till it burst through the Strait of Gibraltar, and extended over seas and continents until then undreamt of, an event which deprived the Mediterranean of that commercial prosperity and greatness which for centuries had been limited to its narrow basin.

Once more this historic sea has become the highway of nations. The persistent energy and genius of two men have revolutionised navigation, opened out new and boundless fields for commerce, and it is hardly too much to say that if the Mediterranean is to be restored to its old position of importance, if the struggle for Africa is to result in its regeneration, as happened in the new world, if the dark places still remaining in the further East are to be civilised, it will be in a great measure due to Waghorn and Ferdinand de Lesseps, who developed the overland route and created the Suez Canal.

But the Mediterranean can only hope to retain its regenerated position in time of peace. Nothing is more certainly shown by past history than that war and conquest have changed the route of commerce in spite of favoured geographical positions. Babylon was conquered by Assyrians, Persians, Macedonians, and Romans, and though for a time her position on the Euphrates caused her to rise like a phoenix from her ashes, successive conquests, combined with the luxury and effeminacy of her rulers, caused her to perish. Tyre, conquered by Nebuchadnezzar and Alexander, fell as completely as Babylon had done, and her trade passed to Alexandria. Ruined sites of commercial cities rarely again become *emporia* of commerce. Alexandria is an exception, dependent on very exceptional circumstances.

The old route to the East was principally used by sailing vessels, and was abandoned for the shorter and more economical one by the Suez Canal, which now enables a round voyage to be made in sixty days, which formerly required from six to eight months. This, however, can only remain open in time of peace. It is quite possible that in the even of war the old route by the Cape may be again used, to the detriment of traffic by the Mediterranean. Modern invention has greatly economised the use of coal, and steamers, by the use of duplex and triplex engines, can run with comparatively small consumption of fuel, thus leaving a larger space for cargo. England, the great carrying power of the world, may find it more advantageous to trust to her own strength and the security of the open seas than to run the gauntlet of the numerous strategical positions in the Mediterranean; such as Port Mahon, Bizerta, and Taranto, each of which is capable of affording impregnable shelter to a hostile fleet, and though the ultimate key to the Indian Ocean is in our own hands, our passage to it may be beset with a thousand dangers. There is no act of my career on which I look back with so much satisfaction as on the share I had in the occupation of Perim, one of the most important links in that chain of coaling stations which extends through the Mediterranean to the further East, and which is so necessary for the maintenance of our naval supremacy. It is a mere islet, it is true, a barren rock, but one surrounding a noble harbour, and so eminently in its right place that we cannot contemplate with equanimity the possiblility of it being in any other hands than our own.

It is by no means certain whether exaggerated armaments are best suited for preserving peace or hastening a destructive war. The golden age of disarmament and international arbitration may not be near at hand, but it is even now talked of as a possibility.

Should the poet's prophecy or the patriot's dream be realised, and a universal peace indeed bless the world, then this sea of so many victories may long remain the harvest field of a commerce nobler than conquest.

Insalubrity of South-Eastern Madagascar.—Mr. G. E. Scott Elliott has recently made a botanical trip in Madagascar from Antananarivo, the capital of the country, to Fort Dauphin, the extreme south-eastern corner of the island. While he found large parts of the interior to be very fertile and populous, he received an unfavourable impression of south-eastern Madagascar. In that part of the great island he says European colonisation could never succeed. The traders along the coast manage to live in a very miserable way, and that is all. It is only the sandy and rocky parts, such as the district around Fort Dauphin, which are fairly healthy and free from fever. "The terrible existence," he says, "led by the few Creole traders on the coast leads one to hope that this country will be left entirely to the natives who may in time become a civilised and Christian people."—*Goldthwaite's Geographical Magazine, April, 1891*

REPORT OF DELEGATE TO THE BRITISH ASSOCIATION MEETING AT LEEDS IN 1890.

THE meeting at Leeds this year was not a very large one, but the papers read were fairly good.

In Section E the number of papers was smaller than formerly, but the quality of them was better, in consequence of greater selection the writers were not too much limited in space.

In several other sections papers of great interest were read on subjects bearing upon Geography.

The joint-meeting was a great success, and was one of the best meetings of the sections.

Several lectures were given as usual. "Mimicry," by Mr. E. B. Poulton, M.A., and "Quartz Fibres," by Professor Boys, were exceedingly interesting.

Some of the recommendations for work by the Society are appended hereto.

The hospitality and kindness of the Yorkshire folk was conspicuous, and everything possible was done for the comfort of the members.

The Corresponding Societies' delegates had two meetings, at which several important resolutions were arrived at, and which have produced good results.

It is needful for the next delegate to Cardiff to make himself thoroughly acquainted with the work of later years, or his work in connection with the Corresponding Societies will be barren.

A list of the principal papers read in Section E is appended herewith :—

* The President's Address on the Physical and Historical Geography of the Mediterranean.

The Vertical Relief of the Land. Dr. H. R. Mill.

Railway Routes from Europe to India. Sir F. J. Goldsmid.

Sir F. J. Goldsmid's paper was intended as a supplement to one read in June, 1878, at the Royal United Service Institution, on "Communications with British India under Possible Contingencies." The main object on that occasion was to advocate the construction of a line of railway connecting the western shores of the Mediterranean with the western coast of India by a direct, convenient, and politically expedient route—a great part of which, on the western side, though *terra incognita* to the many, had chanced to come under the personal examination of the writer and one or two brother officers. After delivery of the address (repeated by request at the Royal Engineers' Institute, Chatham) a leading article and some prolonged correspondence in the *Times*, and more than one leading article in the *Daily Telegraph*, directed public attention to the subject, interest in which was enhanced by the subsequent occupation of Cyprus—practically the step recommended as an introduction to railway operations on the coast opposite Famagusta.

One part of the programme originally sketched out, however, was wanting in essential details. It was not laid down with any precision what should be the actual course taken by the through line to India when branching off from the Lower Euphrates. Surveys and reports by recent travellers have now rendered it easy to supply this link of rail, one which may be appropriately called the Baghdad-Bandar-Abbas section, or, more minutely, the Baghdad-Shiráz and Shiráz-Bandar-

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* These papers have been read to the Society, and appear in the *Journal*.

Abbas sections. As to the route from Bandar-Abbas to Karáchi on the east, and from Tripoli to Baghdad on the west, any doubts or difficulties that present themselves are already ripe for discussion, and the solution cannot be treated as dependent upon further travel and research.

It is proposed to carry the line from Baghdad through Persian Arabistan, either by way of Disful and Shustar, continuing along the recognised track from the latter place to Bebehan; or by an alternative route down the left bank of the Tigris, and *viâ* Haweizah to Ahwaz, whence Major Wells, R.A., has furnished full details of route from his own experiences. The same officer has made, moreover, very valuable suggestions on the mode of reaching Shiráz from Bebehan. Comparing the obstacles presented in this direction with those apparent in the more northern tract of the country, he writes:—

"I think the railway engineer would prefer to take the line from Shustar *viâ* Bebehan to the Ardakhan Valley. He would find no stupendous obstacles this way, and would have wormed himself to the roof of Central Persia without crossing one of the ridges that would guard it; he would tap, too, its most fertile plains, and include Shiráz. The 7,200 feet *kotul* that lies between Ardakhan and Shiráz has no difficulties or gradients that a Fairlie engine, such as is used between Poti and Tiflis, would not surmount. Or I should recommend the trial of the valley of the Shápur river from Bushire to Nodun, where a tunnel would lead through to the river Shur or Fahliyun, which runs from Ardakhan."

On the country east and south-east of Shiráz the reports of travellers are noted, and stress is laid upon the views of Mr. Preece, of the Persian Telegraph, expressed in the following extract from his report of a journey through Daráb and Forg:—

"Should at any time the question of a railway to the Persian Gulf take tangible form, a careful survey of this route, I am convinced, will repay the projectors. As against the Shiráz-Bushire route, there can be no doubt of its greater adaptability. . . . The engineering difficulties are nearly *nil*. . . . A railway along this route would tap a large grain-growing country, and would be easy of access to the inhabitants of Yezd and Kirmán."

An alternative route is also mentioned, running south of Mr. Preece's, through Lar. It is reported on by a late French traveller, M. Kochechouart, formerly Chargé d'Affaires at the Shah's Court.

A brief notice is given of Shustar, Shiráz, and Bandar-Abbas, and the lines of traffic leading to these places. The writer brings his paper to a conclusion by expressing his great faith in the drastic remedy of the iron rail and locomotive to awaken a slumbering but active-minded people, for whom it would be a novelty of high price and usefulness. He does not, however, disguise the fact that the scheme of railway which he describes has not had its origin in the mere wish to benefit a particular nation, but rather in the intention of putting in a 900-mile link in the inevitable great line which will some day connect England with her Indian Empire and which should be as readily available to passengers and goods as any of the more popular and successful lines at home.

* New Trade Routes into Persia. Mr. H. F. B. Lynch.
Nyasaland. Dr. Kerr Cross.
Ashanti. Dr. Freeman.
Zambesia and Lobengula. Mr. E. A. Maund.
The Commercial Geography of Africa. Mr. J. S. Keltie.
The Political Partition of Africa. Mr. A. Silva White.
The Kalahari. Mr. E. Wilkinson.
Exploration of Cilicia. Mr. J. T. Bent.

Mr. Bent's paper showed how geography, history, and anthropology are interwoven in this district—and the study of one is necessary to the understanding of the other. Mr. Bent gives an account of the Armenian fortress of Sis, and the reason for its importance during the Roupenian line of Armenian kings.

The country between Sis and Anazarba is then described, and an account given of the fortress-town of Anazarba and the rivers Jeihan, Sombaz, and Savroon.

Experiences amongst the nomad tribes, and their customs and mode of living, are then given, including the Afshars, the Bosdans, and the Circassians, who frequent this portion of the Cilician plains during the winter months.

The country between Anazarba and Kars Bazaar is described, and this place identified with the ancient Flaviopolis.

Exploration of ruins on a spot near the Pyramus, called Bodroum, is then described, and its identification from epigraphy with the ancient Hieropolis-Castabala.

Inscriptions which show that Artemis Perasia was worshipped here, as Strabo tells us, are referred to to show that this is the Castabala which has hitherto been placed in Cappadocia, and is also the spot which Alexander the Great visited before the battle of Issos.

With notes on Osmanieh and the pass behind it leading into Syria.

Physical Geography of Brazil. Mr. J. W. Wells.

Explorations in the Argentine, Peru, and Bolivia. Mr. M. Thouars.

* The Present State of the Ordnance Survey. Mr. H. T. Crook, C.E.

Journey in the Carpathians and Ruthenia. Miss M. Dowie.

The paper by Miss Dowie dealt with her experiences among the people who inhabit the Carpathian Mountains on the eastern or Polish side. She gave a brief description of the life of these people, their work, costume, and character, and included an account of her journeys, alone, on horseback there, the mountains, and the conditions under which she was obliged to live. She concluded with some remarks upon the future of Galicia and its great natural resources in the shape of petroleum wells, salt and silver mines, together with the immense industries in connection with its woods, yet to be fully developed.

Recent Explorations in New Guinea. Mr. C. Trotter.

Spanish Honduras. Mr. W. Pilcher.

The Actual State of the Question of the Initial Meridian for the Universal Hour. Mr. C. T. de Quarenghi.

Ancient Maps of Egypt, &c. Mr. C. Whitehouse.

Mr. Whitehead said the revised (1890) map of Middle Egypt, prepared by the Intelligence Department of the War Office, shows a part of the changes effected by his own observations. A critical study of the manuscript and printed maps attached to the text of Claudius Ptolemy had enabled him to aver, as a crucial test of their authenticity, that a depression would be found to exist in the desert to the west of the Nile, to the south of the Fayoum, with its western extremity nearly south of Alexandria, due south of the Natron lakes, between the latitudes of Heracleopolis and Oxyrhinchus, or (approximately) of Beni-Suef and Maghagha, of a peculiar shape, somewhat resembling a clover leaf and stem, with remains of a Greek town at the north end of the narrow southern valley, on the east side. The physical conditions of this region have now been determined with extreme accuracy. The map exhibited received the approval of the International Jury at the Paris Exposition (1889), *medaille d'argent*, and has been used by the War Office (1890). The most important maps of the printed editions of Cl. Ptolemy, of the sixteenth and seventeenth centuries, have been reproduced in the facsimile atlas (1890) prepared with great erudition and skill by Baron A. E. Nordenskiold, translated by Mr. Clements R. Markham, C.B., F.R.S. [The maps were exhibited.] The oldest known manuscript is that of Mt. Athos—possibly of the twelfth century. [Exhibited in photographic reproduction.] The most accurate delineation of this region is in the so-called "Agnese" (Palmese), xvii. 29, A.D. 1554 (photographed by Organia). A comparison shows that the Meridis Lacus, as it was in A.D. 150, exactly corresponds to the Wadi Raiyān and Wadi Muella, with the ruins of the Deir Muellah, at the contour of high-Nile; or to that regulating reservoir, with an area of 250 square miles and a depth of 220 feet, which will be formed by putting this depression in communication with the Nile.

Mr. H. M. Stanley's identification of Ruwenzori with the Mountains of the Moon reversed this method. He found the mountains, and then examined the maps and the historical evidence. The result is the same. The existence of ancient originals from which the mediæval copies were made is no longer open to dispute. They have never been subjected to critical analysis. It is reasonable to anticipate other important additions to geographical knowledge as the result of the renewed credit which will henceforth attach to the only atlas which has reached us from ancient days.

* Geographical Teaching in Russia. Dr. H. R. Mill.

A joint-meeting of Section F and Section E was held to hear an address on the question of "Lands Still Available for European Settlement," by Mr. E. R. Ravenstein.

APPENDIX TO REPORT OF DELEGATE TO THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The following Committees were appointed by the General Committee at the Leeds Meeting in September, 1890, besides a large number not of interest, directly, to Geography.

I.—RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
The Volcanic and Seismological Phenomena of Japan.	*Chairman.*—Sir W. Thomson. *Secretary.*—Professor J. Milne. Professor W. G. Adams, Mr. J. T. Bottomley, and Professor A. H. Green.	10
Cooperating with the Scottish Meteorological Society in making Meteorological Observations on Ben Nevis.	*Chairman.*—Lord McLaren. *Secretary.*—Professor Crum Brown. Messrs. Milne-Home, John Murray, and Buchan, and Hon. R. Abercromby.	50

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
The Application of Photography to the Elucidation of Meteorological Phenomena.	*Chairman.*—Mr. G. J. Symons. *Secretary.*—Mr. Clayden. Professor Meldola and Mr. John Hopkinson.	5
Seasonal Variations in the Temperatures of Lakes, Rivers, and Estuaries in various parts of the United Kingdom in co-operation with the Local Societies represented on the Association.	*Chairman.*—Mr. John Murray. *Secretary.*—Dr. H. R. Mill. Professor Chrystal, Dr. A. Buchan, the Rev. C. J. Steward, the Hon. R. Abercromby, Mr. J. Y. Buchanan, Mr. David Cunningham, Mr. Isaac Roberts, Professor Fitzgerald, Dr. Sorby, and Mr. Willis Bund.	20
Recording the Position, Height above the Sea, Lithological Characters, Size, and Origin of the Erratic Blocks of England, Wales, and Ireland, reporting other matters of interest connected with the same, and taking measures for their preservation.	*Chairman.*—Professor J. Prestwich. *Secretary.*—Dr. H. W. Crosskey. Professors W. Boyd Dawkins, T. McK. Hughes, and T. G. Bonney and Messrs. C. E. De Rance, W. Pengelly, J. Plant, and R. H. Tiddeman.	1
The Collection, Preservation, and Systematic Registration of Photographs of Geological interest.	*Chairman.*—Professor J. Geikie. *Secretary.*—Mr. O. W. Jeffs. Professors Bonney, Boyd Dawkins, and V. Ball, Dr. T. Anderson, and Messrs. A. S. Reid, W. Gray, H. B. Woodward, J. E. Bedford, R. Kidston, W. W. Watts, J. W. Davis, and R. H. Tiddeman.	10
The Volcanic Phenomena of Vesuvius and its neighbourhood.	*Chairman.*—Mr. H. Bauerman. *Secretary.*—Dr. H. J. Johnston-Lavis. Messrs. F. W. Rudler and J. J. H. Teall.	10
The Circulation of the Underground Waters in the Permeable Formations of England, and the Quality and Quantity of the Waters supplied to various Towns and Districts from these Formations.	*Chairman.*—Professor E. Hull. *Secretary.*—Mr. C. E. De Rance. Dr. H. W. Crosskey, Sir D. Galton, Professors G. A. Lebour and J. Prestwich, and Messrs. J. Glaisher, E. B. Marten, G. H. Morton, J. Parker, W. Pengelly, J. Plant, I. Roberts, C. Fox-Strangways, T. S. Stooke, G. J. Symons, W. Topley, Tylden-Wright, E. Wetherhed, and W. Whitaker.	5
To complete the investigation of the Cave at Elbolton, near Skipton, in order to ascertain whether the remains of Palæolithic Man occur in the Lower Cave earth.	*Chairman.*—Mr. J. W. Davis. *Secretary.*—Rev. E. Jones. Drs. J. Evans and J. G. Garson, and Messrs. W. Pengelly, R. H. Tiddeman, and J. J. Wilkinson.	25
Disappearance of Native Plants from their Local Habitats.	*Chairman.*—Mr. A. W. Wills. *Secretary.*—Professor W. Hillhouse. Messrs. E. W. Badger and George Claridge Druce.	5

Subject for Investigation or Purpose.	Members of the Committee.	Grants.
		£
To report on the present state of our Knowledge of the Zoology of the Sandwich Islands, and to take steps to investigate ascertained deficiencies in the Fauna.	*Chairman.*—Professor Flower. *Secretary.*—Dr. David Sharp. Dr. Blanford, Dr. Hickson, Professor Newton, Mr. Salvin, and Dr. Sclater.	100
To report on the present state of our knowledge of the Zoology and Botany of the West India Islands, and to take steps to investigate ascertained deficiencies in the Fauna and Flora.	*Chairman.*—Professor Flower. *Secretary.*—Mr. D. Morris. Mr. Carruthers, Drs. Gunther and Sclater, Mr. Thistleton-Dyer, Dr. Sharp, Mr. F. Du Cane Godman, Professor Newton, and Colonel Fielden.	100
The Geography and the Habits, Customs, and Physical Characters of the Nomad Tribes of Asia Minor and Northern Persia, and to excavate on sites of Ancient occupation.	*Chairman.*—Dr. Garson. *Secretary.*—Mr. Bent. Messrs. H. W. Bates, Bloxam, and J. Stuart Glennie, Sir Frederic Goldsmid, and Messrs. Pengelly and Rudler.	30
The Action of Waves and Currents on the Beds and Foreshores of Estuaries by means of Working Models.	*Chairman.*—Sir J. N. Douglass. *Secretary.*—Professor Osborne Reynolds. Professor Unwin and Messrs. W. Topley, E. Leader Williams, W. Shelford, G. F. Deacon, A. R. Hunt, W. H. Wheeler, W. Anderson, and H. Bamford.	150
Editing a new Edition of "Anthropological Notes and Queries."	*Chairman.*—Professor Flower. *Secretary.*—Dr. Garson. Dr. Beddoe, General Pitt-Rivers, Mr. Francis Galton, and Dr. E. B. Tylor.	50
For carrying on the Work of the Anthropometric Laboratory.	*Chairman.*—Professor Flower. *Secretary.*—Dr. Garson. Mr. Bloxam and Dr. Wilberforce Smith.	1
The Physical Characters, Languages, and Industrial and Social Condition of the North-Western Tribes of the Dominion of Canada.	*Chairman.*—Dr. E. B. Tylor. *Secretary.*—Mr. Bloxam. Sir Daniel Wilson, Dr. G. M. Dawson, and Mr. R. G. Haliburton.	200
The Habits, Customs, Physical Characteristics, and Religions of the Natives of India.	*Chairman.*—Sir William Turner. *Secretary.*—Mr. Bloxam. Professor Flower, Drs. Garson and E. B. Tylor, and Mr. H. H. Risley.	10
Corresponding Societies' Committee.	*Chairman.*—Mr. Francis Galton. *Secretary.*—Professor R. Meldola. Professor A. W. Williamson, Sir Douglas Galton, Professor Boyd Dawkins, Sir Rawson Rawson, Dr. J. G. Garson, Dr. John Evans, Mr. J. Hopkinson, Mr. W. Whitaker, Mr. G. J. Symons, General Pitt-Rivers, Mr. W. Topley, and Professor Bonney.	25

II.—NOT RECEIVING GRANTS OF MONEY.

Subject for Investigation or Purpose.	Members of the Committee.
The Rate of Erosion of the Seacoasts of England and Wales, and the influence of the Artificial Abstraction of Shingle or other material in that action.	*Chairman.*—Mr. R. B. Grantham. *Secretaries.*—Messrs. C. E. De Rance and W. Topley. Messrs. J. B. Redman, W. Whitaker, and J. W. Woodall, Maj.-Gen. Sir A. Clarke, Admiral Sir E. Ommanney, Sir J. N. Douglass, Capt. Sir G. Nares, Capt. J. Parsons, Capt. W. J. L. Wharton, Professor J. Prestwich, and Messrs. E. Easton, J. S. Valentine, and L. F. Vernon Harcourt.
To carry on Excavations at Oldbury Hill, near Ightham, in order to ascertain the existence or otherwise of Rock Shelters at that spot.	*Chairman.*—Dr. J. Evans. *Secretary.*—Mr. B. Harrison. Professors Prestwich and H. G. Seeley.
Considering the advisability and possibility of establishing in other parts of the country Observations upon the Prevalence of Earth Tremors similar to those now being made in Durham in connection with coal-mine explosions.	*Chairman.*—Mr. G. J. Symons. *Secretary.*—Mr. C. Davison. Sir. F. J. Bramwell, Mr. E. A. Cowper, Professor G. H. Darwin, Professor Ewing, Mr. Isaac Roberts, Mr. Thomas Gray, Dr. John Evans, Professors Prestwich, Hull, Lebour, Meldola, and Judd, Mr. M. Walton Brown, and Mr. J. Glaisher.
To undertake the Investigation of the sources of the River Aire, and also to test the value of the Uranin and other Dyes in investigating the Courses of Underground Streams.	*Chairman.*—Professor R. Meldola. *Secretary.*—Professor Silvanus P. Thompson. Mr. J. Birbeck, Mr. Walter Morrison, M.P., Rev. Dr. Styles, and Mr. Thomas Tate.
The Invertebrate Fauna and Cryptogamic Flora of the Fresh Waters of the British Isles.	*Chairman.*—Professor Bayley Balfour. *Secretary.*—Professor J. C. Ewart. Canon A. M. Norman, Professors J. Geikie, A. C. Haddon, T. Johnston, W. J. Sollas, and Lapworth, Dr. H. Scott, and Mr. F. E. Beddard.
To make a digest of the Observations on the Migration of Birds at Lighthouses and Light-vessels, which have been carried on by the Migration Committee of the British Association.	*Chairman.*—Professor Newton. *Secretary.*—Mr. John Cordeaux. Messrs. John A. Harvie Brown, R. M. Barrington, and W. E. Clarke, and the Rev. E. P. Knubley.
The Teaching of Science in Elementary Schools. ⁂ This includes Geography.	*Chairman.*—Dr. J. H. Gladstone. *Secretary.*—Professor H. E. Armstrong. Mr. S. Bourne, Dr. Crosskey, Mr. George Gladstone, Mr. J. Heywood, Sir J. Lubbock, Sir Philip Magnus, Professor N. Story Maskelyne, Sir H. E. Roscoe, Sir R. Temple, and Professor Silvanus P. Thompson.

Subject for Investigation or Purpose.	Members of the Committee.
Ascertaining and recording the Localities in the British Islands in which evidences of the existence of Prehistoric Inhabitants of the country are found.	*Chairman.*—Sir John Lubbock. *Secretary.*—Mr. J. W. Davis. Dr. J. Evans, Professor Boyd Dawkins, Dr. H. Munro, Messrs. Pengelly and Hicks, Professor Meldola, and Dr. Muirhead.

Resolutions referred to the Council for consideration, and action if desirable.

That the Council be requested to consider the question of watching the operation of Acts relating to Scientific and Technical Education, and to take such steps as may seem desirable for furthering the objects of those Acts.

That the Council be requested to consider whether it is not desirable to make special provision for the comprehensive consideration by the Association of questions relating to Scientific and Technical Education.

That the Council urge upon Government to take steps to hasten the completion of the Ordnance Survey and to afford the public greater facilities for the purchase of the Survey Maps.

The Name is Budapest.—*The Bulletin of the Hungarian Society of Geography* makes an appeal to writers to give the name of the capital of Hungary correctly. Up to 1872, Old Buda, Buda and Pest, which up to that time had formed distinct municipalities, were united into one town, under the name of Budapest. Eighteen years have since elapsed, but it is common to find Buda and Pest spoken of as separate towns in books, periodicals, and newspapers. "We therefore beg," says the *Bulletin*, "geographical authors and editors of periodicals to give henceforth to the capital of Hungary the name of Budapest, whatever be the language the author employs."—*Goldthwaite's Geographical Magazine, April, 1891.*

Practical Uses of Geography.—Many people of Kansas and Nebraska would have found it greatly to their advantage had they been better acquainted with geography before they made homes, at great expense of time and money, in semi-arid districts. In the last decade, thousands of emigrants went to new homes in these great states, attracted by reports of the fertility of the soil and the ease of making there a comfortable livelihood. Now, if they or their children had been properly instructed, they would have learned that through these states passes what is known as the sub-humid belt, a strip of country several degrees in width, in which, when the rainfall is below the average, it is almost impossible where irrigation is impracticable to make a blade of grass thrive. The settlers flocked in large numbers into this semi-arid belt. For the past few years, evils which anyone acquainted with the nature of the country knew was likely in any year to occur, has befallen these unfortunate pioneers. The rainfall has been decidedly below the normal, and settlers having no provision for irrigation have been forced to emigrate. This is why, during the years 1889 and 1890, Kansas has shown an actual decrease in population. Hundreds of families have left for Oklahoma and the Rocky Mountains. Thus it is seen how closely dependent the rate of increase in population is, upon geographic conditions, and the importance of being familiar with the various natural conditions and aspects of a new country before risking life, money, and time in making homes there. A little more geographic knowledge would have saved thousands who have been miserable in the semi-arid belt of Kansas and Nebraska from the great hardships which they have undergone.—*Goldthwaite's Geographical Magazine, April, 1891.*

BRITISH TRADE WITH ALGERIA, TUNIS, AND THE SAHARA.

By Mr. GUSTAV JACOBY.

[Addressed to the Members, Wednesday, November 5th, 1890, in the Memorial Hall.]

The principal object of my address is to direct your attention to those markets in Northern Africa which are subject to the laws and regulations of foreign governments, from which our rivals are bent on ousting us, and to examine with you into those means of defence which might conduce to prevent our expulsion from the same; and, lastly, to consider with you the commercial aspects of the Anglo-French Agreement.

I.

Let us first glance at our trade with Algeria. Previous to the year 1860 the same was carried on under the French General Tariff of 1791, an inheritance of the wars of the Revolution and an embodiment of retaliatory measures, which Mons. Michel Chevalier, the great French economist, thus summed up in the *Revue des deux Mondes* of 1877, viz.: "The uniform, brief, and brutal rule of prohibition, or absolute exclusion, intensified by the auxiliary measures of preventive confiscation, venal denunciation, domiciliary visits, and, worst of all, bodily examinations, perfect insults to public morality and decency." It is not to be wondered at that British trade with Algeria was entirely in the hands of smugglers from our great Mediterranean emporii, Malta and Gibraltar.

According to our trade statistics for 1855, our imports from Algeria were valued at the insignificant sum of £19,127, and our exports to Algeria at £21,268. A fair portion of the exports to Algeria would appear already at that time to have consisted of Glasgow figured muslins, for the purpose of making turbans and women and children's garments. I now come to a most interesting epoch of British trade with Algeria, achieved by the efforts of Mr. Richard Cobden and his able assistant, my late friend Mr. Stephen Mason, M.P. for the Stirling Burghs. It is well known that Mr. Cobden's chief aim was directed towards obtaining from France an admission of the principle that no goods of British manufacture could be subjected to higher duties than 10 per cent on their value. In this he failed; but after having obtained, it is believed, a vague, verbal promise from Napoleon III. that, at a future time, this principle should be carried out, he consented to the French proposal of 15 per cent as the maximum duty, which became embodied in Article 1 as the leading maxim or basis of the Cobden treaty.

One remarkable fact in connection with the negotiations, however, is this, that the Emperor Napoleon agreed to a 10 per cent *ad valorem* duty for only *one* class of cotton goods, viz., figured lappets, the probable reason being that the Emperor had heard of this interesting branch of Scotch manufacture, due to the discovery in 1773 of the lappet wheel, a simple contrivance for regulating the "to-and-fro" movement of the needles in such a manner as to form figures very similar in style to those of the much more expensive Jacquard loom, and to produce bright and very gaudy effects which had met with a ready sale in Algeria and other Oriental countries, even when

Algiers was under the Turkish suzerainty, and, of course, Napoleon did not wish to be behind the Turks. When, about twenty years ago, I went as one of the pioneers of this country to explore Algeria commercially, I soon discovered that, owing to the undoubted adaptability of this article to the country's requirements and taste, an extraordinary development of this branch of business was possible, and by throwing the whole of my energy into it I succeeded in greatly extending the output for that country. In a minor degree, by very close observation of the prevailing taste, I developed a considerable business in other Scotch cotton fabrics, such as fine plain muslins weighing less than 3 kilos. per 100 square metres, fancy printed calicoes, jaconets, and pocket-handkerchiefs, or cotton foulards, all of which Mr. Cobden had succeeded, it is most remarkable to say, in getting admitted at 15 per cent *ad valorem*.

The heavier Manchester fabrics of plain cotton goods, grey, bleached and coloured, woven and dyed cottons, being all subjected in the Cobden treaty to specific rates calculated upon the excessively high cotton prices of 1860, were not on such a favourable footing as the Glasgow productions, and hence the great complaints which arose in Manchester later on, when cotton prices had fallen, regarding the oppressiveness of these specific duties which hampered the trade both with Algeria and France.

Manchester owes a heavy debt of gratitude o its late member, Mr. John Slagg, or the energetic and skilful advocacy of a more liberal tariff; and, for my own part, I wish to express the deep obligation which I shall always feel towards him for the assistance which he at all times accorded me in promoting this cause.

You will remember that after the war of 1870 M. Thiers re-hoisted the flag of Protection in France, and denounced the Cobden treaty, appointing commissions in order to set aside the *ad valorem* duties and replace the same with so-called specific equivalents. When Sir Louis Mallet, in April, 1877, left for Paris to negotiate the renewal of the Cobden treaty, which had until then been allowed to remain provisionally in force, I was asked to draw up a full report on the effects of the French treaty as regards cotton tissues, and had the satisfaction of being complimented by Lord Lyons, and subsequently of being appointed by a general meeting of the Glasgow Chamber of Commerce to assist as an expert in the negotiations for the renewal of the French treaty.

For many years I devoted my whole leisure to press activity for the maintenance of the treaty. Later on, I wrote the so-called "Glasgow Manifesto," signed by eighty-three of the first Glasgow firms, urging "the necessity for Her Majesty's Government of carefully avoiding to enter into negotiations with the French Government upon a basis so complicated, uncertain, hazardous, and so unprolific as this new General Tariff, and strongly recommending that the principle of a maximum *ad valorem* clause, analogous to Article 1 of the Cobden treaty, should be firmly adhered to." Mr. Slagg sent a hearty letter of approval and the Chambers of Commerce of Manchester, Bradford, Leeds, of the south of Scotland, and sixty-five associated chambers took action on the same lines.

Communications were opened with the French free-traders. M. Paul Leroy-Beaulieu, M. Chevalier's eminent son-in-law, condemned as outspokenly as myself the General Tariff Bill, pointing out "the multiplicity of the articles taxed, the superabundance of the classifications, which go to make the tariff a perfect maze *(une chinoiserie inextricable)*, and lastly, a most unjustifiable increase of so many duties."

The new duties on figured muslins, instead of being "mere equivalents," as represented, were proved by me to be increased—as regards three of the principal classes—by the almost incredible rates of 840, 1,010, and 1,250 per cent respectively.

However, I kept up my courage, because, through the experience of selling the same fabrics in Algeria, inclusive of duty paid, and in the neighbouring Barbary

States of Morocco and Tunis, exclusive of duty, I felt no difficulty in understanding this new-fangled protectionist commutation dodge. One of my acquaintances persuaded me to go to London, with the view of consulting his friend, Mr John Bright, as to the means of averting the dangers threatening Mr. Cobden's work.

Mr. Bright received me at the top of the staircase of the Reform Club. After opening the case, he asked if I were able to plead the cause successfully in the *Times* newspaper. My answer was: "I feared not. I was a commercial man, and perhaps not skilled enough to gain victory in the *Times*." Mr. Bright said: "Then, my good friend, you are not fit for the task." I suggested that we should take the Foreign Office into our confidence, and make Lord Salisbury understand the French protectionist mystification. His reply was so extremely uncomplimentary towards the latter, that I do not feel justified in repeating it.

I soon found out that the great man had not recovered from the terrible blow inflicted upon him by the death of his wife, and was not fit for any efforts at that time.

My next application was to The Right Hon. W. E. Forster, with whom I had been in correspondence on the subject. He received me in his study at Eccleston Square. A number of blue books and French official publications on the treaty lay on the table. He said, "You have tackled a great subject in which you can do infinite harm if you are not equal to it. . . . Several of my friends have spoken well of you, but I can do nothing for you until I have convinced myself, by examining you thoroughly, that you are competent for your task. . . . Will you not be offended if I examine you on these blue books?" I expressed my willingness.

Mr. Forster then cross-questioned me at considerable length, not alone with regard to Manchester and Glasgow productions, but also with respect to dress fabrics. Some points were raised where the interests of Bradford were in collision with the more important ones of Manchester and Glasgow. Mr. Forster, himself largely interested in Bradford manufactures, said: "Then Bradford must give way on this question." What large-mindedness this incident shows. After a time the blue book he held dropped to the ground. He seized my hand and said, "I am perfectly satisfied. I see that you are master of your subject, and from now consider me at your disposal whenever you please." I then broached the subject of seeing Lord Salisbury. Mr. Forster said, "By all means: he is a very clever man. I only regret that some slight differences which we have had prevent my accompanying you to see him; but I will immediately instruct a friend of mine to bring about an interview."

Next morning, I think, a messenger from the Foreign Office brought me an invitation to see the Marquis. I laid the case before him, and showed him that almost every commutation figure of the French scheme was a mystification and a piece of downright trickery. He approved of my sugestion of taking action *previous* to the passing of the General Tariff Bill, which was then before the French Parliament, with the view of letting the French Government know that if they intended to pass that bill for the purpose of creating a fresh basis for negotiating a new treaty of commerce with this country in place of the basis of the Cobden treaty, it was useless their going on with the same, as Her Majesty's Government would not enter into any negotiations on such terms.

His Lordship promised to take this proposal into serious consideration, and expressed his great satisfaction at the manner in which I had made clear to him the meaning of this web of intricate commutation figures.

I felt little hesitation as to which of the two, Mr. Forster or Mr. Bright, was possessed of greater powers of discernment in judging character, or was less liable to be ruled by the bias of party feeling.

A short time after my interview a letter arrived from the Foreign Office stating the terms on which I was to go to Paris in the name of the Glasgow Chamber of Commerce, and backed up by letters of recommendation to Lord Lyons in order to open the eyes of the French Government.

No sooner had this letter arrived than a base intrigue on the part of a jealous permanent official of the Foreign Office, commenced behind Lord Salisbury's back, which frustrated my mission to Paris, and no further steps were taken to prevent the General Tariff Bill passing into law.

The preliminary agreement, however, was afterwards made for the renewal of the Anglo-French commercial treaty between M. Léon Say and Earl Granville, on the basis of "An amelioration of the *status quo*, in the sense of the development of commercial relations." Subsequently M. Léon Say was disavowed and recalled. The day previous to the arrival of the French negotiators in London I received a remarkable letter from the French General Consul, inviting me to a private meeting of the French negotiators immediately after their arrival in London.

The late M. Mariani, some time afterwards French Ambassador to Italy, who died at Rome recently, opened the conversation by defending the withdrawal of M. Léon Say's promises, quoting, as precedents, the negotiations of the Treaty of Westphalia, and so forth. My answer was very brief. I said, "If you have come to plead in this fashion before our ministers, I recommend you to return straight home to Paris, and assure your ministers that no negotiation is possible on such grounds. I could not pretend," I said, "to reply to your arguments, as I am not a diplomatist, but merely a commercial expert, but I feel sure that your pleading will not go down with the British people. M. Léon Say had promised us the amelioration of the *status quo*, and Earl Granville had accepted that promise as the basis of a new negotiation. Now, you have been sent here to plead that you will not hold to your promise. It reminds me of the Milanese, who said to the Emperor Barbarossa, "You had certainly our oath, but remember, we did not swear that we would keep it.'" M. Mariani took no offence at my rebuke—on the contrary, he seemed to admire its frankness. M. Amé, the Directeur Général of the French Customs, spoke next. He began by saying that he would accept the *status quo* of 1860, with the exception of a few items on which he required an increase, and produced a paper for the basis of a detailed discussion, which, by glancing over, I at once recognised as an old acquaintance, containing, as a general rule, the same commutation figures which I had already proved to be colossal exaggerations of the existing duties. After reserving in principle the right of insisting on the promised amelioration, I offered to discuss the chief classifications on that basis. I commenced by taking those articles subject to the 15% *ad valorem* duties in the Cobden treaty, and produced a number of tables, with weights and prices, showing at a glance the value of goods per kilo, thus permitting a comparison of the duty with that by weight.

When I showed M. Amé the weights and prices of figured muslins, and the ten and twelve fold increase of the proposed duties, he was quite dumbfounded. It was therefore easily seen that the author of the French general tariff had been simply an unwitting tool in the hands of the French Protectionists, and had not the slightest conception of the effects of his own propositions. I recommended to the Foreign Office an immediate rupture of the negotiations, and I had very good reasons for knowing that the French would have given way, but our ministers had not the courage to say "No," and by continuing to negotiate, in deliberate defiance of the settled policy of our leading Chambers of Commerce, and to enter into a labyrinth of interminable and intricate tarifications without having previously established a fundamental principle as a basis, they ignominiously wrecked the Cobden treaty.

Some slight amendments were brought about by the French negotiations with Belgium and Switzerland, in which we have benefitted by the "most favoured nation" clause, but the terrible blow which our trade with Algeria received through the non-renewal of the Cobden treaty is not realised by merely glancing at the official statistics, which take into account only that portion of our exports which appears in the bills of entry as direct shipments to Algerian ports, and leave out altogether that part of our exports which is shipped *via* French ports. In 1880, when I was the expert of the Glasgow Chamber of Commerce, I made a very elaborate inquiry, both in this country and in France and Algeria, and ascertained that our exports to Algeria amounted to £800,000, instead of £299,898, as is stated in our official statistics. At present the discrepancy between our official statistics and the actual amount of our exports to Algeria is not nearly so large, because those classes of goods which used to be shipped via France, where they received some subsidiary treatment, are no longer capable of being exported at all, owing to the prohibitive duties. According to our official statistics the direct shipments to Algeria amounted for the year 1888 to £252,255, and appear in the Algerian statistics at 7,654,088 francs, or £306,000. This latter sum would appear to include the whole of our shipments made via France. Compared with 1880, therefore, our exports have decreased during the last nine years not less than 62 per cent.

In comparing the imports from Algeria for the two years 1880 and 1881, amounting to £741,453 in 1880, and £750,858 in 1881, together £1,492,311, with the two years 1887 and 1888, amounting to £575.955 in 1887, and £636,371 in 1888, together £1,212,326, we find a decrease of £279,985, or nearly 20 per cent during these nine years.

It is thus manifest that the present duties are acting most oppressively upon our export trade to Algeria, and as a consequence are likewise restricting our purchases from Algeria; but the majority of the French Chambers of Commerce having clamoured for a further increase of the tariff, the French Government has just presented a new double-barrelled tariff bill, which includes a maximum and a minimum tariff. Taking the minimum tariff for a basis, I feel no hesitation whatever in affirming that, as regards the cotton industry of this country, it would be tantamount to prohibition as absolute as the general tariff of 1791, and infinitely more injurious to Lancashire and Glasgow than the McKinley Bill.

The very eccentricity of these tariffs must be looked upon as a pledge of security against any British minister in future stultifying himself by entering upon any commercial negotiations whatever with France, without having previously established a basis analagous to the first article of the Cobden treaty. The threat of putting this country under the maximum tariff is but a bugbear to frighten the uninitiated. For all practical purposes the maximum tariff is quite as good or bad as the minimum is. If you construct a weir high enough to prevent water flowing over under all circumstances, what does it matter whether or not you add to its height? The declarations of M. Jules Roche on the 29th October, before La Commission des Douanes, as to the motives for adopting the double-barrelled tariff, are instructive: "The Government desired to avoid the inconvenience arising from according the most favoured nation treatment, as in granting the same to any nation which would only give us unimportant advantages in return, *a fool's bargain* (*'un marché de dupe'*) would be made."

Let our ministers beware of fool's bargains with France!

Our sales of cotton goods to France, which in 1885 amounted in round figures to £1,900,000, had dwindled down to £1,300,000 in 1888, being a decrease of 30 per cent within the space of three years, showing conclusively the oppressiveness of these duties. It would seem that on every class where they had still left us a loophole they are now determined to leave us none, and have clapped on the same additional duties. And what is worse, we are only to benefit by this minimum tariff on condition that we make further concessions to France! What further concessions can we make? Not one penny of duty do we levy upon £6,000,000 worth of silks, £5,500,000 of woollens, £1,800,000 of leather goods, £2,400,000 of butter, £1,400,000 of refined sugar, £1,100,000 of eggs. We levy duty only on £3,000,000 of wines and £1,200,000 of brandy, which are only compensations for excise duties on similar home productions. The foregoing figures represent our chief imports from France during the year 1888. During the three years 1886-1888 we imported from France £150,500,000 of merchandise, against which we only sold her about £42,000,000 worth, or, roughly speaking, a fourth part only of our purchases. Is France acting fairly towards us in thus seeking to close her market to us? Are we really so much at her mercy as many people affect to believe? What hinders us from adopting her system of a maximum and a minimum tariff, and withholding from the benefits of the latter the productions of any Power which taxes our staple goods at above 10 or, at most, 15 per cent *ad valorem?* It is not necessary to adopt any protective duties to bring this about, nor any special retaliatory measures against any one Power in particular. We have only to restore to their old level the wine duties which Mr. Cobden surrendered in 1860 to Napoleon III. in return for concessions made. We imported from France in 1888 5,644,000 gallons of wine, or about 36 per cent of the total quantity of wine imported into the United Kingdom.

France cannot now afford to blind herself to the importance of the outlet she has in Britain for her wines and spirits, or affect to be as indifferent as in 1881, when her vines were devastated by the phyloxera. She has since then wonderfully recruited her vineyards, and in addition Algeria has advanced its viticulture to a production of nearly 2,000,000 hectolitres per annum. Nor can France afford to undergo the risk of having her wines and brandies taxed at higher rates than we should accord to Italy or Spain, who are so close upon her heels already.

It appears to me that this is the most important leverage we can bring to bear effectively upon the monopolists of France and the best means of stirring the French and Algerian free traders and wine producers to decided action to prevent a disastrous rupture of our commercial relations.

But all this pleading of mine will be labour lost unless those interested at once organise themselves into a great defence league against French monopolism.

Let our Manchester Chamber of Commerce, in particular, call a special meeting of its members in order to deliberate on these affairs, and establish a new section of French and French colonial shippers. Let our operatives' unions, likewise, appoint committees of investigation. Then there could be no doubt but the French Prohibitionists would soon tremble in their shoes at the alarm which would be raised in all quarters in France and Algeria depending for their existence upon a free market in this country. There has been a great outcry in France at the vexatious formalities enacted by the McKinley Tariff Bill. In my opinion their own regulations are every bit as bad, perhaps worse. It is well known that the Rouen and Epinal manufacturers of cotton goods are the instigators of this baneful policy of prohibition in France and Algeria. Instead of endeavouring to find out those specialities for which the French cotton manufactures are best adapted, and concentrating their attention and energy upon the development of these, they have become "Jacks of all trades," trying to make all kinds, monopolise the home market, extort exorbitant prices from consumers there and in Algeria, many of whom, especially in the latter country, are in the direst straits of poverty, and lulling themselves to sleep by their too comfortable situation. The fortunes that are being made by French cotton spinners and manufacturers at the present time are simply incredible. I know this on undoubted authority. One of my personal friends, who had not been fifteen years a partner in a large concern, was lately in a position with the profits he had made to withdraw from the old firm and build a large spinning and weaving mill.

It seems to be an axiom that Algeria is a detached part of France, *une France Africaine*, rather than a colony. From this axiom all the chief errors of the French administration of Algeria have arisen. By a mere stroke of the pen the law of 17th July, 1867, which enacted a special Algerian colonial tariff, placing a considerable number of goods on the free list, was rendered null and void. Had Algeria been a self-governing colony, I feel deeply convinced that, by reason of its splendid maritime position, within 24 hours' sail from Marseilles or five days from London, by its agricultural, mineral, and other resources, its general fertility, and its incomparable climate, it would have attained a degree of prosperity with which its present situation cannot for a moment be compared. Is it creditable to France that during the period from 1830 to 1888 the total Algerian revenue was only 1,256,041,004 francs, while the Algerian expenditure amounted to 5,018,066,462 francs, showing an excess of expenditure of 3,985,684,255 francs, or over £151,000,000 sterling?

In addition, the lives of several hundred thousand soldiers have been lost in the subjugation of the Arabs, and in quelling over one hundred insurrections. Nothing proves more conclusively that the real object of the French conquest of Algeria was neither an extension of her commerce nor colonisation, but one of dominion and supremacy in the Mediterranean Sea, and of carrying out Napoleon I. and Polignac's ideas of rendering the Mediterranean a French lake—than the direction in which the French Government extended the Algerian railways from Oran eastwards to Constantine and thence to Tunis, parallel to the coast, roughly speaking, and neglecting to construct, until just recently, lines of penetration from north to south.

Let us for a moment look at Algeria from a geographical point of view. We distinguish three different zones: The Tell, the Uplands or Steppes, and the Algerian Sahara.

1. The Tell comprises the arable country, hilly, beautifully wooded, and very fertile, extending for a breadth of forty-five miles, on an average, from the Mediterranean to the foot of the mid-Algerian mountain range, embracing all the most important towns of the country.

2. The Uplands, or Steppes, covered with esparto, alfa, and similar grasses suitable for manufacturing purposes, and likewise affording pastures for its numerous herds of domestic animals. This district is interspersed with marshy lakes called Shotts or Sebkhas, and is bounded in the south by the Sahara border range, a third parallel chain, including the range extending alongside the coast, extending over a breadth of nine leagues far into Tunisian territory, and the peaks of which are, up till the end of March, covered with dazzling snow.

3. The Algerian Sahara *(petit desert)* forms a sort of ante-desert, and comprises a large number of oases—Laghuat, El Gerara, Guardaja, Tuggurt, El Wad, Uargla (the queen of oases), El Golea—and is bordered by a region of sandhills called El Erg.

Now, as a matter of course, these three zones differ in their commercial aspects as they do geographically. The same cereals, vegetables, leguminous plants, fruit, olives, vines, tobacco, bark, and cork being produced in the Tell from Oran to Tunis, no important exchange can, therefore, take place between the different localities appertaining to the Tell.

On the contrary, the inhabitants of the Uplands, who only grow grasses and farm cattle, stand in need of the products of the Tell as well as of European goods for clothing—iron implements, &c.

The Algerian Sahara, however, is a plantation region, in which is carried on the so-called *colonisation saharienne*, and what was formerly nothing but sand is being fast transformed into luxuriant gardens by means of artesian wells.

I can only refer to the district south of the ill-famed desert railway terminus, Biskra, called the Waddy R'hir, where, during the last thirty years, forty-three oases have been formed with 520,000 palm trees, and 100,000 fruit trees. The dates produced there are of a very superior quality, almost as delicious as those of the Tunisian Belud-el-Djerid, and their value is estimated at the rate of 35 centimes per kilo (about 1½d per pound), or 2½ million francs per annum, which are, to a large extent, sent to France by parcel post.

Below the whole valley of Waddy R'hir and for some hundreds of miles to the south of it, alongside the immensely wide bed of the so-called "stream" (Arabic, *Igarghar*), a subterranean current of water runs, only requiring to be reached by boring, and thus opening up the glorious perspective of a vast extension of this colonisation. It has been said that the date is for the desert what cereals are for Europe, and what rice is for India and China, and what maize is for America. It is for the inhabitants their chief food, their most certain product, the prime object of consumption and exchange (Sereziat). Dates alone, however, are not sufficiently nutritive, hence the cultivator's need of exchanging cereals.

The inhabitants of the Sahara are settled in towns, having been pushed by the Arab invaders into the Sahara, and have preserved their sedentary instincts. You will now easily understand how the succession of the different economic zones from north to south necessitates an interchange of products, and how important the establishment of railways would have been in the direction from the coast to the desert. But is it not ludicrous to see the French becoming suddenly crazy over the construction of railways connecting the Mediterranean with Lake Tchad, a distance of about 1,650 miles, and Lake Tchad with St. Louis in the Senegal, a distance of about 2,300 miles, which is running to the other extreme altogether.

I am glad to see that the Conseils Généraux of Algiers and Oran are keeping their heads cool on this fantastical scheme, for they know very well that no trade with the Sahara of any importance does or *can* exist.

The whole traffic consists of a few caravans starting from the neighbourhood of Ain-Seffra, the southernmost point of the railway in the province of Oran, carrying to the inhabitants of the oasis of Gurara, in the confederacy of Tuât, wool, butter, dried meat, cereals, beans, cheese, oil, soap and candles, and bringing back dates chiefly, which are not cultivated to any extent in the province of Oran, and in addition deerskins, spices and lemons, the total turnover for the year amounting only to a few thousand pounds.

You will notice that no European goods are carried by these caravans, for the simple reason that the Saharians, as merchants, are too shrewd to buy goods enhanced in price by duties, &c., on an average to the extent of about thirty per cent, which they can get from the caravans starting either from Morocco or from Tripoli, in both of which countries comparatively free trade exists.

The Saharian merchants are not likely to believe in that new-fangled Protectionist doctrine which the French have adopted from Prince Bismarck, according to which all Protectionist duties must be borne by the foreign producers and not by the consumers. Not only do the Algerian consumers pay for the exorbitant duties which the goods are subject to, but they also pay a profit to the British merchants who advance the capital for the payment of the duties, and who compulsorily overtake the risks of fines and chicaneries of the customs, on this outlay, in addition to that made on the goods. Imagine what a loss this means to the wealth of the French and Algerians! The further the custom-houses of Algeria are extended towards the south, with a prohibitory tariff remaining in force, the more European goods must enter into Algeria by way of smuggling, owing to the comparatively low price of the same articles outside the borders of Algeria and the much dearer market prevailing inside the Algerian frontiers. Frequently our Oran clients get a rebate of from 25 to 30 per cent, representing the duty from the British merchants upon that portion of their orders which they cause to be shipped via Gibraltar to the Spanish free-port of Melilia. From this place these goods are distributed by way of Udjda to the oases of Figig and Tuât, at a very much lower price than rules inside Algeria for the same articles. How then can any European articles be sold from Algeria to the interior of Africa by means of a trans-Saharan railway, except by first establishing free trade in Algeria itself? Yet M. Duponchel, M. Victor Largeau, M. Tarry, M. Rolland, M. Grille, and all the other originators of trans-Saharan railway schemes, represent as their chief object, the attraction of Soudan commerce to Algeria. The truth, however, has leaked out in an article in the *Economiste Français* of the 18th October, in which it is contended that "it is inexpedient for France to show too conspicuously the military and strategic character of the trans-Saharan railway by the State taking the construction into its hands, that it would be politic to leave in the shade its *rôle* of a mere instrument of domination, and that it would be more adroit to represent specially the trans-Saharan scheme as a commercial enterprise, having for its object the opening of new markets for European products to the central Soudan."

I cannot congratulate M. Leroy-Beaulieu on the diplomatic skill with which he has thus let the "cat out of the bag." Nor have I either, unfortunately, any doubt that this trans-Saharan railway scheme, destined to render more compact the African possessions of France and to crush Islamism, will be the inauguration of an epoch of bloodshed and slaughter in the interior of Africa compared with which the wars against the natives of Algeria and Tunis, and even the bloody campaigns now raging against the Moors north of the Senegal colony, will be mere child's play. Step for step, inch for inch, of that line will have to be wrested by blood and iron from the most warlike race of the world—the Tuaricks—that nation of pilots, rovers, and blackmailers of the desert, who, with their fast Mehari camels, dominate a territory five times the size of France, the descendants of the "veiled men" who invaded Spain in the year 1089, and who have upheld their independance and their Moslem faith with unsurpassed bravery aud vigour since time immemorial. Or do the French really indulge in the hallucination that the Sultan of Morocco, the suzerain of the confederacy of Tuât, will voluntarily surrender that fertile belt of country, or that its fanatical inhabitants, who were goaded into a religious frenzy by General Negrier's blasphemous barbarities against the Saint of El Abiod, their holy place of pilgrimage, will receive with open arms their hereditary enemies, or that the Sultan of Turkey will sell to France Ghadames or Ghat, the strongholds of Islamism in Africa, the rocks of Moslem hope, the anchor of Moslem propaganda, as M. Edouard Blanc coolly affects to believe, to judge by his admirable paper in the last bulletin of the Paris Geographical Society?*

It is absolutely certain—from a commercial point of view—that only smugglers could be attracted to Algeria, and not legitimate Soudan traffic. Now I do not intend to pose as a prophet in commercial matters, but I ask anyone interested in this subject to look at my published reports on the French Treaty, to see with what confidence I did prophesy what has lately taken place on the Tunisian frontier of Algeria Allow me just to quote a sentence from my article, signed "Veritas," which appeared in a French newspaper, published in London, called *La Cité*, of the 7th May, 1881, in reference to the Cobden Treaty:—

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* Les Routes de l'Afrique Septentrionale au Soudan." 7 Serie, Vol. XI. 2 Trimestre, 1890.

"What can be the object of these eccentric and paradoxical propositions concerning figured muslins, when we consider that there does not exist in France any such industry as the making of lappets, not even a single loom to be protected, and that the inevitable consequence of having our goods subjected to the general tariff would be to divert once more—as happened already during the *regime* of Louis Phillippe—our Algerian trade to the ancient contraband routes, by way of Gibraltar and Morocco in the west, and Malta and Tunis in the east of Algeria, and thereby deprive the French Government of the considerable revenue which it at present derives from British imports, and turn the tribes of Algeria, Morocco, and of the Regency of Tunis, nay, even of those of the south of the Sahara, into a vast gang of smugglers, to the great prejudice of civilisation and the progress of humanity."

Indeed, a few of these gangs of smugglers have been caught descending with their camels from the mountain passes of Tunis into the plains of Algeria; but for the many that have passed successfully along a frontier of such enormous extent, and, to all intents and purposes, unguarded by any troops or customs' guards, how few will have been caught! Imagine what a temptation it must be for any Arab, whose daily wages often amount to only a few coppers, to cross over into Algeria, wearing upon his head a red fez, encircled by a white turban, which will cost him in Tunisian territory say three to four francs, and then returning with his fez alone, having left the turban behind, for which he would have found a ready sale at seven or eight francs, the price enhanced by the Algerian duties, &c., as before mentioned.

A word as to our IMPORT trade from Algeria. It consists chiefly of esparto, alfa, locust beans, barley for brewing, bark for tanning, cork, olive oil, and minerals. This trade is a monopoly in the hands of two or three British merchants, who spend most of their time in Algeria, and who charter vessels bringing coal and taking back the cargo which they have collected.

Were there a regular return service of quick steamers established between Algiers and London or Liverpool, and later on with Manchester, an immense business in fruit, mandarins, oranges, lemons, figs, dates and grapes, and in early vegetables, as well as in wines—light clarets—and many other products could be done; but the oppressive duties upon British goods, cottons, and iron, and machinery, so necessary to an agricultural and mineral country, render our intercourse with Algeria so onerous that, instead of the business being an ever-increasing one, it is decreasing from year to year, and the economic development of Algeria cannot escape being thereby seriously handicapped, if not permanently injured. Whilst just as fast as the European colonists, owing to the enormous progress made in the culture of the vine, fruit, and early vegetables, and that of cereals, are improving their position, the natives are sinking more and more into wretched poverty. They are gradually being deprived of their lands in the Tell, where one scarcely now sees any of the nomadic tribes. They are being pushed down into the Sahara, thus strengthening the discontent and irritation there prevailing, owing to the Panislamitic agitation, which has been fostered by the Mahdist Dervishes, or Marabouts, as they are called in Algeria. Last year I witnessed in several Algerian towns scenes of plunder which were attributed to an anti-Semitic movement of the Arabs, as a good many shops belonging to Jews had been pillaged; but, as the result of inquiries made, I feel disposed to ascribe them to the state into which poverty had driven the marauders. Such a state of things would appear to be very dangerous to the security of French rule in Algeria.

Lest you may suspect me of partiality or pessimism, allow me to refer you to the impressions of a journey by a French patriot, M. Edmond Plauchut, recorded in the October number of the *Revue des deux Mondes*, who traversed the whole of Algeria and Tunis, and even the interior from Biskra to the frontiers of Morocco. After describing the hatred of the Arabs towards the French, and expressing his deep apprehensions of new insurrections at the first outbreak of a European crisis, M. Plauchut confesses that no assimilation whatever has yet taken place between the French and the natives after sixty years of rule, and what was worse, the Spanish and Italian elements, which were overshadowing the French, could become nothing but an aggravation of French embarrassments in the future.

The commercial policy, therefore, pursued by France in Algeria of enhancing the cost, by oppressive duties, of the commonest raiments and other necessaries of life of a people miserably struggling for existence, merely to enrich a few greedy French manufacturers, is, I think, a most suicidal one.

II.—TUNIS.

I shall now take leave of Algeria, and make a few remarks regarding our trade with Tunis, which, I am glad to say, is not a decaying one like that of the former country, but one full of promise and good augury; because, resting still upon the foundation of a sound and just treaty of commerce—that of Sir Richard Wood, of the 19th July, 1875. Clause 7 of that treaty provides that "the duties to be levied on any article of British produce and manufacture so imported shall in no case exceed one fixed rate of 8 per cent *ad valorem*, to be calculated upon the value of such merchandise at the place of landing, or a specific duty, fixed by common consent, equivalent thereto." The clause further assures to this country for all time treatment on the footing of the most favoured nation. Article 13 contains the important stipulation that agricultural implements and machines imported for private use only, and not for merchants for sale, shall enter free of duty, thus enabling British manufacturers to take orders from the agriculturists direct on exceptional terms. Article 16 stipulates the right of British citizens to establish "commercial, industrial, and banking companies, co-operative or mutual, or shareholding associations, or any other association," thus affording to British capital a magnificent field of activity in that rising country. In every line of this treaty one cannot help admiring the wisdom which has inspired its framer, his consideration for, and sympathy with, the 8,000 hard-toiling Maltese subjects of Her Majesty, and the 20,000 (now 30,000) self-sacrificing friendly Italians, to whom that country is chiefly indebted for its agricultural development and progress in civilisation, and his anxiety to prevent heavy burdens being laid upon the shoulders of these toilers by the augmentation of the prices of all necessaries through the imposition of excessive duties. What a contrast of spirit this treaty exhibits to that of the recent declarations of the French Foreign Minister, M. Ribot, who boasted that France, during the nine years of her occupation, had opened up many roads, built many bridges, established railways, and was now constructing a canal connecting the sea with the Lake of Tunis, and providing thereby a commodious harbour at Tunis itself; but did not hesitate to declare that if France had not encountered difficulties with foreign Powers she would long ago have imposed upon the Regency a Customs Union (Union Douanière) on the basis of that now existing between herself and Algeria.

Now, what would happen if this threat should, with the consent of our Government, be carried out? As a trader largely engaged with both Algeria and Tunis, and visiting those countries frequently, I can speak with some authority on the subject. Supposing that the present French conventional tariff, which has recently been denounced by a large majority of the French Chambers of Commerce in their replies to the Conseil Supérieur du Commerce as not sufficiently protective for their national industries, nor intricate enough (as they clamour for additional subdivisions or categories of the tariff), were allowed to be imposed upon the Regency, what would be the difference of the incidence on the chief articles of cotton manufactures which we are now exporting to Tunis? On the usual Tunis qualities of T cloths, the average value of which is about 7½d. net per lb., the duty as per the conventional tariff would be at the rate of 50 francs per 100 kilos., which equals 2¼d. per lb., or 30 per cent on the value, instead of the present rate of 8 per cent. On shirtings, of which about 200,000 pieces are annually exported to the Regency, the duty would vary according to the fineness of the fabric, between 20 and 40 per cent *ad valorem*. On prints, cretonnes, and printed cotton handkerchiefs, the duty would, on an average, be tripled. On coloured woven cottons the duty would be tripled, and in some cases be quadrupled. On the important article of Glasgow lappets for turbans the duty would be, according to kind, enhanced fourfold to tenfold, as shown by the table on page 286, which also comprises the duties under the newly-proposed maximum and minimum Tariffs Bill, involving a further enormous increase of the incidence on these fabrics. These turban duties have become, as it were, a test measure for gauging the economic policy prevailing at different epochs in France, and my table strikingly proves that the French Republic, unlike Napoleon III., does not feel ashamed in matters economic of appearing behind the Turks and the Bey of Tunis.

Apart from the excessive rate of these tariffs, we have to consider the vexatious, intricate, and harassing mode of their assessment. Scarcely any bale is now opened at the Tunis Customs-house, except in the rare case when the authorities dispute the declared value on presentation of the original invoices and the authorities prefer to receive eight pieces per hundred in kind. In Algeria every bale is stripped of the hoops and opened, and every piece scrutinised; the width and length are checked and the weight taken, with a view to finding how many kilos. one hundred square metres to each article weigh, in order to settle for every piece the chief category of the tariff. Then commences the procedure of fixing the number of threads per five millimetres, in order to ascertain the subdivision; then, if a printed fabric, the number of colours or rollers by which the design was produced has to be settled. The Customs-house officials, being awarded one-half of any fine that can be imposed for any inaccuracy in declaration, are in the habit of passing every piece over the scales, well aware that, owing to the inevitable variations in the finishing of cotton goods, a few pieces can now and then be found in a bale which might afford a pretext for a penalty. Moreover, the utmost arbitrariness in classifying certain descriptions of goods is prevalent and the most contradictory and unjustifiable decisions are formed, and confirmed on appeal by the superior authorities even. Owing to the severe handling the goods undergo, and the careless repacking of the bales destined for the interior, the sightliness of the pieces is sometimes affected to such an extent that a shipment is left for account, as no Algerian merchant will have anything to do with the clearing, and buys only on condition that the British merchant shall deliver "duty paid." Every exporter engaged in this business will verify my assertion that France is doing her best to throttle our trade entirely by these practices, and she might as well adopt frankly and openly the old Spanish system of making it a capital offence for her colonies to carry on any intercourse with foreigners.

Under the Anglo-Tunisian treaty we maintain our commercial supremacy up to this day, whatever the French officials, with their cooked statistics, may assert to the contrary. What can we think of these official statistics which put down the total value of the imports from Britain during the first six months of this year at 322,590 piastres, or £8,737? Why, *one* Manchester house alone out of the many who trade with the Regency exported to that country goods of value exceeding this amount considerably.

Her Majesty's Consul at Tunis has just rendered a report, in which a feeble attempt is made to correct the official returns of the Tunisian authorities. He states the imports from England and Malta into the Regency for 1888 at £260,000, and for 1889 at £250,000.; and the exports from Tunis to England and Malta for 1888 at £100,000, and for 1889 at £120,000.

He also endeavours to correct the returns with regard to Italy, Germany, Austria, and Belgium.

I am heartily pleased at the attempt of our consul to deal with this subject, however unsuccessfully, considering that the French Free-trade newspaper, *La Gironde*, of Bordeaux, a few months ago let the "cat out of the bag" in a rather incautious way, similar to that of Mons. Leroy-Beaulieu. Referring to the Tunisian statistics, it says: "It is evident what precious as well as irrefutable arguments these statistics afford us to bring about the rupture of the Anglo-Tunisian treaty."

Now, I think that after this audacious avowal of the purpose of their dodge, it is needless to examine these statistics any further.

Her Majesty's Consul says that, with regard to cottons of British manufacture, "they will continue paramount in the Tunisian market *so long as* the present tariff of 8 per cent *ad valorem* remains in force." Now, I trust that this does not infer that, after the ignominious collapse of the negotiations regarding the surrender of the Anglo-Tunisian treaty, there is any danger of any British Minister ever consenting to an abrogation of Sir Richard Wood's treaty, which, as I show below,* is to all intents and purposes a perpetual one, and cannot be modified without the consent of Her Britannic Majesty or her heirs; and further, that we possess a formal guarantee from France by which she became surety for the observance of that engagement entered into by the Bey of Tunis.

Our consul further remarks that the trade in manufactured cottons, valued in 1888 at £165,335, and in 1889 at £134,690, consists almost wholly of Manchester goods transhipped to Tunis from Malta.

This sentence proves by its glaring incorrectness that our present consul in Tunis is not in touch with the merchants there, as I witnessed myself, or he would have learned that a very large portion of the cotton goods exported from this country were Glasgow fabrics. How would it otherwise be possible to explain the great interest and attention given by the Glasgow Chamber of Commerce to the Tunisian treaty?

For the same reasons I cannot attribute any great value to the consul's estimates of our trade with Tunis, which I feel certain has been greatly underrated. I have no hesitation in saying that if our Board of Trade, our consuls and our officials in Malta, would exert their brains a little they would experience no difficulty in arriving at a fair estimate of our trade with Tunis. I gauge the total imports and exports between Great Britain and Tunis for the year 1890 at one-half to three-quarter millions sterling, and I do not believe that I shall be far off the mark.

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* The 40th Article of the Anglo-Tunisian treaty runs thus: "In order that the two contracting parties may have the opportunity of hereafter treating and agreeing upon such other arrangements as may tend still further to the improvement of their mutual intercourse and to the advancement of the interests of their respective people, it is agreed that at any time after the expiration of seven years from the date of the present Convention of Commerce and Navigation either of the high contracting parties shall have the right to call upon the other to enter upon a revision of the same; but until such revision shall have been accomplished by common consent, and a new Convention shall have been concluded and put into operation, the present Convention shall continue and remain in full force and effect."

I inquired when in Tunis last year at many of the wholesale houses as to whether any French cottons were kept by them or had been bought at all. The result was that I found a few fine furniture sateens—certainly not more than £2,000 worth of French cotton goods—had been imported during the whole year 1889. Not one piece of greys or whites could I hear of, the large amount appearing in the Tunisian statistics evidently comprising Belgian, Swiss, German, and Austrian goods, arriving by way of Marseilles.

Taking into consideration the unsatisfactory state of jurisdiction in Tunis and the insecurity of credits in general, I am inclined to say that our cotton goods trade with that country is now being pushed to excess. Moreover, very heavy losses have been made during the last few years by Manchester merchants, owing to their trust in careless or dishonest representatives. It is no exaggeration when I state that the greater part of the commercial representatives of the Regency, as well as of Algeria, are totally unreliable and unworthy of confidence. The presence of several native merchants in our city who know so much better than we Europeans how to keep down expenses, is the cause of profits for all staple goods being cut down to the lowest point and being altogether out of proportion to the risks involved.

On the other hand, all other branches of British commerce, such as cutlery, smallwares, agricultural machinery, implements, colours and paints, and many other branches, are scandalously neglected. It is true that considerable difficulties do arise from there being no wholesale houses in existence in these classes of goods. In consequence this trade has, unfortunately for us, become the monopoly of large French bazaars or retail warehouses, several of which are branch establishments of Paris firms.

There is, too, a widespread belief—let us hope totally unfounded—that the British Government will sooner or later surrender our commercial privileges in Tunis, and of course British capitalists in consequence hesitate to found similar establishments, which would certainly very soon rival the French bazaars, which sell to the public at exorbitant prices. Unless, therefore, our ministers do their duty in speaking boldly out on this question, and inspire confidence into our capitalists to make investments in the Regency, we cannot hope that our trade will assume that development which might otherwise be attained.

It is asserted that Tunis, being a natural continuation of Algeria, cannot for any length of time remain separated from the latter by customs barriers. Long ago I pointed out to M. Paul-Leroy Beaulieu that I could see nothing at all to prevent the realisation of his pet idea of amalgamating the Algerian and Tunisian tariffs provided France chose the right method of carrying out the scheme. It is only necessary to re-establish, with suitable alterations, the law of 17th July, 1867, which enacted a special Algerian tariff, and, placing it upon the basis of 8% *ad valorem* duties, stipulating the right of exacting, with a view of guarding against false declarations, if deemed necessary, consular certificates.

An Algerian-Tunisian Zollverein would thereby be established *de facto*. No European power would desire, or, even if desirous, could, carry out any opposition to such a purely fiscal measure, established upon such a sound and equitable basis to all concerned. The customs barriers between the two neighbouring countries being no longer required could be removed, no political annexation to which foreign powers could object being implied.

III.—TUNIS AND SAHARA.

We now come to a most interesting subject, the alleged commercial connection between Tunis and the Sahara, by means of caravans, referred to in nearly all the histories of commerce, by Mr. McCulloch in his celebrated Dictionary of Commerce, by several geographical explorers, and in most handbooks on Tunisian Geography. I have visited the Regency regularly, at frequent intervals, during the last twenty years, and have never found a trace of its existence, but, to make quite sure, I recently entrusted one of my Tunisian friends—a gentleman of great experience and influence, with a special inquiry into the matter, and he reports as follows: "It is a complete error to think that any commercial relations whatever now exist between Tunis and the Sahara. That trade is now chiefly in the hands of the Tripolitans. The caravans which leave Tripoli are composed of people partly from the town of Tripoli and partly from the town of Ghadames, a place fifteen days' journey from the coast. The Tripolitans form their convoy at Tripoli, the Ghadamsans their's at their own town. They traverse the Fezzan by their respective routes, and meet together at the Turkish garrison town of Ghat or Rhat, thence pursuing their journey to the Soudan in company. At the beginning of this century the caravans, on their return from the Soudan, *did* take the direction of Tunis instead of Tripoli, but, owing to the greed of a rapacious minister of the Bey of Tunis, who levied heavy blackmail on the caravans, the Ghadamsans determined never to set foot on Tunisian soil again. The question of prevailing upon them to come back to Tunis, and even to Algeria, was lately the special object of some secret French diplomatic mission, which, lest they should awaken the Sultan's suspicions, proceeded to Ghadames by way of the Algerian Sahara.

These missions turned out complete fiascos. How could a fanatic Mussulman race, like the Ghadamsans, ever think of abandoning the territory of the Sultan, the Vicar of Mahomet, in favour of the propositions and the country of infidels? Never! Therefore I can only conclude that the whole thing is a myth.

IV.

I have now reached the last stage of my address, that of the Algerian Hinterland, recently the subject of a preliminary agreement between the Governments of this country and of France.

As a consequence of this Anglo-French agreement, it is apprehended that, at some future time, the Algerian custom-houses will be moved southward, to a place called Say, on the Niger, and to another place called Barrua, on the north-west side of Lake Tchad. With a view to cautioning the Foreign Office, I made a point of causing certain questions to be put in the House of Commons. The answers given by Sir James Fergusson have been the cause of considerable anxiety in Manchester commercial circles. In reply to a question asked by Mr. Buchanan, "as to whether the French were to have the power of including the enormous tract of north-west Africa in the tariff zone of Algeria, because such a power would operate seriously to the detriment of British trade," the Under Secretary of Foreign Affairs said, "With regard to trade, of course they could not make an agreement with France as to the limits of the duty to be charged, because it was well known that France would not go into any agreement of that nature."

Now, if you will look at a good map of the Sahara trade routes you will at once perceive that unless Her Majesty's Commissioners, who are at present in Paris, negotiating the details of this preliminary agreement, may yet succeed in obtaining the consent of France to allow the commercial highways, by which the trade from Morocco in the west and Tripoli in the east, now passes through the Sahara to the Soudan to remain open, and to sanction the right of free transit, our important trade with the Sahara and the Soudan, as well as that of other Powers who are not parties to this one-sided bargain, will be annihilated by Lord Salisbury's arrangements.

Exactly in the same longitude as Paris, directly below Algiers, is situated the important emporium and centre of Saharan commerce, Ain Salah, which lies at about an equal distance of 800 miles from Timbuctoo, Mogador, Tangiers, Algiers, and Tripoli, where the different caravans meet and barter their produce against our goods.

No caravan could pass if Algerian custom houses barred the way. Further, as the French openly declare that their aim is to unite Senegambia with Algeria, the commercial highway between the Atlantic and the western Mediterranean ports of Morocco (Mogador, Tangiers, &c.) on the one hand and the Soudan on the other, would run the risk of becoming likewise barred by any connection which France might establish between the custom houses of the Senegal and those of Algeria Again, the connection between the eastern province of Algeria and Lake Tchad would in all probability, intercept our caravan trade which passes by the two chief lines, first, that of Tripoli, Murzuk Ghat, and the Soudan, and secondly might interfere even with the so-called Birma route from Tripoli, Murzuk, Birma to Lake Tchad, as well as with the line which branches out from Murzuk to Cyrenaica and Cairo by way of Audjila. True, the Hinterland of Morocco was not specially referred to by Lord Salisbury, but in declaring his impression that the Algerian frontiers in the south were quite open, and the country between Algeria and Say was no man's land, he referred to it indirectly. One can only suppose that his lordship has been misled by French maps similar to that published in the "Proceedings of the Royal Geographical Society," of November, 1890, which, quite contrary to the best German and Keith Johnston's maps, show the Algero-Moroccan frontiers to run almost from north to south with an open Hinterland, whilst in reality an enormous fertile belt, the 400 confederated oases of Tuât, which pay tribute to and virtually recognise the suzerainty of the Sultan of Morocco, bars for a distance of five degrees, from one degree west of Greenwich to nearly four degrees east of Greenwich, a space of 350 miles in length, the exit of Algeria to the desert. The most influential French papers, and especially *all* the geographical reviews, have openly advocated the annexation of the confederacy of Tuât by blood and iron. The French foreign minister's bold allusion, towards the beginning of November, to France "now holding possession of the caravan routes across the Sahara," the entire trade of which is actually in our hands, is a gross anomaly, and bears out my argument.

The extent of our Morocco business, which depends for a large portion on its Saharan outlet, may be gauged from the following statistics of the imports of British cotton yarns and goods, which during the year 1888 entered the following eight Moroccan ports, paying an *ad valorem* duty of eight per cent:—

	Quantities. Packages.	Value. Francs.		Quantities. Packages.	Value. Francs.
Tangiers	2,044	3,463,000	Casablanca	1,400	2,486,540
Tetuan	—	395,170	Mazagan	1,363	2,720,000
Laraiche	766	1,084,600	Saffi	870	537,500
Rabat	872	1,807,000			
Mogador	2,140	2,695,000			15,188,810

The total imported into these eight ports amounting to 15,188,810 francs, or £607,555. In our British statistics of 1888 the total amount of British imports of *all kinds* is given as £423,842, which shows once more how misleading some of our official trade statistics are.

As regards our imports from Morocco, I can only state the amount at which they figure in British statistics, viz., £506,812.

Now, as the Anglo-French arrangement was made for the purpose of conciliating France with respect to her pretended rights in Zanzibar, it seems to me necessary to compare the extent of our Zanzibar trade with that of Morocco.

"British trade with Zanzibar is included in the return for East African native states, and as Abyssinia is excluded, these refer almost entirely to Zanzibar, and the mainland formerly belonging to it. The total export from these states, in 1888, to Great Britain amounted to £69,088, and the imports from Great Britain to £80,818. ("Statesman's Year Book, 1890.")

It is thus manifest that our trade with Zanzibar is a mere bagatelle compared with that of Morocco. It is an undoubted fact that a considerable amount of Manchester goods find their way from Morocco to the Soudan by means of the Tafilet and Tarudant caravans, or are bartered on the way at the large salt depots of Sebkha, Idjil, and at Taoudeni against salt. At the latter place an important addition to the supply of camels is made, and the journey to the Soudan, which densely-populated country is entirely destitute of salt, is continued.

I need not say what tremendous injury such interference with the existing channels of our trade would entail, and specially for our Lancashire industries; for both the Morocco and Tripoli merchants, who have the outfitting of these "Desert Fleets" in their hands, have virtually their chief starting point in our own city. I refer to the colony of turbaned gentlemen, who form such a characteristic feature of Manchester commerce, and who are quite ignorant, it would seem, of the risks to which they may be exposed by the pending arrangements.

As regards our trade with Tripoli, I have not been able to obtain reliable statistics. Our trade statistics do not specially refer to Tripoli, and shipments from this country are mostly made *via* Malta. By a special agreement with the Turkish Government, our merchandise passing through Ghadames to the Sahara and the Soudan are subject only to a transit duty of two or three per cent, which is thus virtually free trade. Thus, whilst all other nations, even that of the Turks, are vieing with each other in the opening up of African markets, the French Republic alone gives the example of a retrograde policy, and, in fact, seems bent upon cutting up trade already established since time immemorial, and attempting to yoke the people of the Sahara and of the Soudan with burdens which they are unfit to bear.

Surely we have a right to insist that the Foreign Office will maintain the vested interests of her manufacturers and merchants against all wanton encroachments, and to act the part of vigilant guardians of British interests.

It would appear that the new-fangled doctrine of Hinterland, which surely is of a very doubtful value in international law, is only applied by our rivals for the purpose of thwarting our interests, and its privileges are systematically withheld from our nation.

I have had occasion during the last two or three days to acquaint myself with the extreme discontent prevailing amongst the West African merchants of this country regarding the pending negotiations, which are being conducted in secrecy, and without any consultation with those interested, and which they fear may result in the Hinterland of the Gold Coast in the direction of the bent of the Niger, as well as that of our Sierra Leone Coast in the direction of the Fouta Djallon, and the sources of the Niger, being abandoned to France.

It would seem that the whole of these African arrangements, instead of taking into due consideration the commercial interests of the country, have been made by our Government solely with a view of removing possible political difficulties and conflicts. Now, I yield to no one in my desire to have the ties of friendship and goodwill with France drawn closer; but I feel sure it is not by the Foreign Office sacrificing the commerce established by years of labour and expense in deference to the bullying demands of the French Chauvinists and monopolists that this desirable result will be obtained.

In spite of the lesson given to France by the Franco-German War, she now proclaims the theory of natural frontiers as applicable in Africa. Morocco is the key to the province of Oran ; Tuât is the key to the Algerian Sahara ; and Ghadames and Rhat are the keys to Tunis.

Lest anyone considers me guilty of exaggeration, I shall quote the concluding sentence of the remarkable report of M. Edouard Blanc, engineer of the French Government, entitled, "Les routes de l'Afrique septentrionale au Soudan," in the latest "Bulletin de la Société de la Géographie." 7 serie, Vol. XI., 2 Trimestre, 1890, p. 216 :—

"We shall retake, as far as possible by peaceful means, but with all the tenacity due to our *natural right,* the route of the 7th degree of longitude east of Paris, which passes by Ghadames and Rhât. We shall one day occupy Ghadames—we shall occupy Rhât; and under the shelter of our flag the caravans will be able to pass *freely (sic)* from the Mediterranean to the Soudan."

An Algerian writer, M. F. Gourgeot, officer of La Légion d'Honneur, in his "Situation Politique de l'Algerie," p. 103, says that "England, which had been in the Tunisian question benevolent, would assume a very different attitude as regards that of Tripoli, *se mettrait carrément et résolûment en travers de notre action.* Notre agression serait trop injuste à ses yeux comme aux yeux des puissances européennes."

I sincerely trust that M. Gourgeot has hit the nail on the head, that England will plant her foot down, and keep it there, warding off all interference with established rights by means of Hinterland, or any other Quixotic heresies, and dispel once for all the notion that this country yields to the clamour of her foreign rivals.

My address having no pretension to scientific theorising, but being of an altogether practical tendency, I would suggest, in conclusion, that your Society appoint a committee of investigation and vigilance as regards the pending African negotiations, with a view of memorialising Her Majesty's Government on the necessity of protecting British commercial interests to the utmost of its power.

COMPARATIVE TABLE OF DUTIES ON 100 PIECES OF TURBANS.

Value per Piece f.o.b. Africa.	Total Value of 100 Pieces.		Nett Weight 100 pcs. Kilogrammes.	Anglo-Tunisian Treaty.	Cobden Treaty	French Conventional Tariff	French Tariff Bills, 1890.	
							Maximum Tariff	Minimum Tariff
						Per 100 Kilos.		
s. d.	£ s. d.	Francs.		8%	10%	207fr.	524·20fr.	384fr.
				Francs.	Francs.			
1 11	9 11 8	239·60	83·5	19.15	28·96	172·85	437·70	320·65
2 0½	10 4 2	255·20	93·9	20·40	25·52	194·40	492 22	360·50
2 2½	11 0 10	276	97	22·10	27·60	200·80	508·40	372·48
Average per cent ad val....				8%	10%	75%	189%	137°/o

NYASALAND AND AFRICAN EXPLORATION.

By the BISHOP OF MANCHESTER, Archdeacon MAPLES (of Likoma), the Rev. D. KERR CROSS (of the Free Church of Scotland Mission), and Mr. J. W. MOIR (manager of the African Lakes Company).

[Addressed to the Members in the Mayor's Parlour, Friday, Nov. 21st, 1890.]

MR. E. SOWERBUTTS read the following letter from Consul H. H. Johnston, regretting that he was unable to be present:—

Queen Anne's Mansions, St. James's Park, S.W., October 13th, 1890.

Dear Sir,—I expect by the 21st of November I shall once more be on the seas, returning to Africa. You have three such first-class authorities on the subject to address you on that night that I know I could add nothing of interest to what they will tell you, unless I trenched on the forbidden ground of politics. What little I have observed of Nyasaland I have mainly put into my *Graphic* articles.—Very truly yours,
H. H. JOHNSTON.

Eli Sowerbutts, Esq., F.R.G.S.

The following letter had also been received from the Rev. W. C. Porter, of Newala:—

Newala, Sept. 3, 1890.

Dear Mr. Sowerbutts,—I have been sadly negligent in writing to friends in England this year, partly perhaps owing to the uncertainty of our communications. It rather damps one's ardour in correspondence not to know when one's letters will get off, and when one can receive any. However, I have had a little unpleasant experience, which shall be an excuse and incentive to writing by this despatch. After waiting month after month for a safe journey to the coast, and some certainty of getting to Zanzibar, I left last June for Lindi with twelve of our native boys for Kiungani, two of them teachers who had been home for a holiday. We had no trouble on the way—as we had thought might be the case—from Arabs encamped outside the town; and the chief of the German station, and the other Germans, were most hospitable and kind during the seven days of our stay there waiting for the German steamer, by which we reached Zanzibar, free of charge, on July 1. I proposed returning the end of that month by German steamer to Mikindani, wishing to try the route thence to Newala. But I could not get permission to come, either on that occasion nor again at the beginning of August, by German steamer, either to Lindi or Mikindani. So I had to use the Portuguese mail to Minengene—otherwise Palma, in Tunghi Bay. It proved a comfortable and fairly quick boat, and leaving Zanzibar on Monday, Aug. 4, about 7 a.m., we reached Minengene on Tuesday afternoon. A considerable amount of bales was landed there, for the purchase, I understood, in great measure, of india-rubber, of which there seems a fair trade in that port. The young Portuguese officer in charge of the fort received me most civilly and hospitably with supper, bed, and breakfast next morning, for which I had good cause to be the more grateful, as two Frenchmen had come for a journey up-country—one of them a M. Anzelog, who went some five years ago to examine the coal deposit on the Lujenda for the Seyyid. The custom house at Palma makes the passage of goods that way disagreeable as well as expensive. I had with me only a young boy returning to his parents from Kiungani, so had to look out for porters to Newala, and I was ignorant of that route, and the distances, as far as personal experience was concerned, and had not a map or notes of others' journeys, not intending to come that way. Simba, formerly agent for an English trader, Mr. Harrison, took me into his house a second night, and helped me about porters. He perhaps might have been able to do more for me if he had not been engaged about the Frenchmen's caravan. I planned to cross the Rovuma near the coast, but as there was difficulty in getting men, other than those of a chief named Msaka, about two days' journey inland on the south of the river, and these objected to go the way I wished, I settled to engage them, and come by their village. I knew there was some risk, as the chief has a bad character—formerly, I believe, was very troublesome to the Portuguese, though now they have made friends, and there is enmity between him and our chief Matola. On the second day the men laid down their loads and demanded their pay, and went off, the head man, however, remaining with me and the boy. However, they returned presently, and we reached Msaka's. Arrived there, they again demanded to be paid, instead of going on further, as agreed, and they went off with the loads. I followed, not knowing whether they were going to plunder them or what they would do. Presently an Arab appeared, as is generally the case, it seems, in all that part of the country, both north and south of the Rovuma. Eventually I paid the men, they promising to go on to the Rovuma next day. They were perhaps really afraid to go on to Lumanga's, a considerable chief, a long day from Newala. Anyhow it was all over with more carrying by those men. The head man, who was also engaged as my cook, went to his home at a distance with an umbrella of mine. At first I thought Msaka was a poor creature under the hands of the Arab, and that I had to work the latter to get more porters, &c. Msaka, however, I think, in a quiet way, was sharp and active enough for his own interests, as natives generally are, and he and the Arab worked well together for each other, and each for himself, and so they got 12 rupees and a 4s. cloth out of me for the former. I must say, however, that this Msaka would have some of my boxes opened. He did not plunder, nor did he much trouble me, even when worse for pombé. He unfortunately found out the excellence of ginger-nuts, and was greedy after them. My former head man and cook (Bonoman by name) appeared again, without umbrella; but on further bargaining for the journey failed, his mind being apparently set on getting a kisibao, but in vain. Next day I opened negotiations with the Arab, and he agreed to take me to Lake Lidedi for 40 rupees. Lake Lidedi is a small lake south of Rovuma, near a longer lake—Nangadi—about two or three days' journey from Newala. As my boy Dandi had disappeared, an alarm possessed me that he had been kidnapped, but needlessly. I put together next morning in bag handkerchief, biscuits, matches, &c., as a resource in case of desertion by porters. Further agreement with this Arab for 5 rupees additional for men's food, and 10 rupees for himself. Start delayed because of pombé drinking. On 14th we heard that there was smallpox on the way we intended to go, *i.e.*, along the high-ground, and therefore settled to go by Rovuma. Next day the porters were troublesome about pay. The Arab gave up his engagement, and returned the money for porters. The two Frenchmen came to Msaka's with a Portuguese and Simba, dogs, &c., &c. They seemed to wish to avoid any intercourse. At last, on August 19, I got to the Rovuma, but unfortunately the chief there, Msefu, was a man who had last year been put into a chain at Newala, because Msaka had seized and kept three men from Newala, on account of some former quarrel. So matters were not much improved. Next day the French caravan; M. Anzelog shot at hippos and wounded one. I paid Msefu an exorbitant charge for canoes to cross the Rovuma, he naturally taking advantage of the opportunity of remembering the chain, as one may suppose. With difficulty I got porters to Nekwanga's, on the other side, at some distance, some being coast people, who had come, I think, with the French caravan. On the sand in the middle of the Rovuma they demanded more pay, to which my necessity, not my will, consented. Nekwanga has some show of being a chief, and gave me goat and rice. Next day, however, his men, after agreeing to half their first demand, and being paid for part of the way, struck in the path for remainder, and then left me at a village before reaching the place agreed upon, and I had to get more men, and pay part of the way twice over. They seemed to boast of their Mohammedanism as security for their good faith. The result shows what that is worth, as professed in that part at least. This conflict about rate of pay and attempt to use pressure, by leaving loads by the path and going back, continued. I adopted the plan of going on, on the chance of the men following after all, which they did. At a village where Dandi and I arrived by ourselves, having left the porters to come to reason by themselves, and having lost ourselves till set on our path by a woodcutter, things seemed to be critical. Directly we had seated ourselves on a baraza, a crowd came round, excited and noisy, and we hurried inside a house—some trying to get in, others to keep them out, and whether it was all in consequence of a drunken quarrel—ending, I think, in murder—which had taken place near to very lately, or whether they took me for a German, and under coast influence were wroth, or whether it was merely curiosity aggravated by pombé I don't even now know. Unfortunately I do not know Makonde dialect. In the midst of the excitement the men arrived with the loads, to my relief, as I had begun to give them up, and to consider about sending for them. When I entered Lumangas, on the sixth day from Msaka's, he seems to have been alarmed and gone for his gun, thinking that I was a German, and was much relieved to find that I was "Apota." I tried to persuade him to make friends with the Germans. As to that French caravan, either they themselves were uncertain or they kept their intentions in the dark. I heard that at one place lately, south of Rovuma, the Portuguese flag had been hoisted. It seems they were going to see about working the coal on the Lujenda, Namtusis, and also make a depôt at Lake Lidedi. Possibly they were helping the Portuguese to establish themselves in the district inland south of the Rovuma. I understood that they were going to fetch up more loads from the coast. In the country north of the Rovuma, in the German "sphere of influence," there seems a great deal of half-concealed ill-feeling against them, and Arab influence seems strong for two or three days' journey inland. I am sorry to hear that the behaviour of the new comers at Lindi and Mikindani is calculated to provoke very reasonably the hostility of the natives. Considering the nature of the Makonde country, and the distances, I do not see much prospect at present of good order and peace, and such blessings of civilization following from the occupation. On the other hand it may be that caravans from inland will be diverted to the routes through Makualand, between the Rovuma and Zambesi rivers. There is an immense deal to be done yet, if all this appropriation and partitioning of the country is to result in real good to the inhabitants, a cure of the slave trade, and even advantage to those who come to settle, withal introducing the blessings of civilisation. This is rather a strong dose, but you will kindly pardon the excess, as the former deficiency of my communication. You will perhaps see Archdeacon Maples soon. I had the great pleasure of meeting him at Zanzibar, and am very glad to find him full of his former vigour and life. With very kind remembrances to all, I am, yours very truly, WM. C. PORTER.

THE BISHOP'S ADDRESS.

The Bishop said there were certain faint-hearted persons at present who, taking advantage of mistakes which had been made and faults which had been committed by individual African travellers, were endeavouring to suggest to us that all African exploration was foolish and useless, or worse. He was afraid we must admit that certain mistakes had been made and certain faults committed, but he asked people to withhold their final judgment until we were acquainted with all the circumstances. But, admitting that faults had been committed and that mistakes had been made, did it follow that we should therefore entirely abandon the attempt to introduce Christian civilisation into Africa? Knowing what we did about the present condition of that unhappy continent, was it possible for us to fold our hands in smug content and pretend that we believed that the inhabitants of Africa were living in a kind of savage Arcadia? We knew that the very opposite was the fact. The natural condition of the negro savage was one of deep moral degradation and unhappiness. The stronger were always oppressing, tormenting, and destroying the weaker, and both stronger and weaker were in a state of continual terror because of their childish belief in the existence of malignant unseen powers. Then we knew that the Arab and the semi-Arab Mussulman were turning the very richest and most populous parts of Africa into a mere human hunting ground, and using the better arms and the higher intelligence of a superior race to turn Africa into a veritable hell upon earth. Even if these things were not true, he held that the time had passed for us to draw back when we found so many of the European Powers partitioning Africa into spheres of influence and penetrating it everywhere with their soldiers and traders. And so he believed we must go on endeavouring to improve the condition of Africa, endeavouring to bring into beneficent contact with its savage peoples the force of Christian civilisation, and so to adapt this force to their prejudices, their weaknesses, and their capacities, that on the one hand we should exclude the dire evils of ignorance, superstition, slavery, and drunkenness, and on the other hand gradually raise Africa to a higher moral and social and religious level. He thought we ought to learn three lessons from our experience in Africa, and especially our recent experience. We ought to learn, first, a lesson of humility, for experience showed how terribly degrading was the influence of a savage life, and how much an English gentleman depended for the maintenance of his highest moral attributes upon the support of the Christian society in which he is born and bred. And, secondly, he thought we ought to learn a lesson of watchfulness. When people went out into the savage countries they ought to be continually calling to their remembrance the fact that they were bound to live amongst savage peoples a higher life than that which was around them; and though this was a secular society, he ventured to say they ought to pray to God to give them grace to preserve them from doing anything in the centre of darkest Africa which they would be ashamed of doing in the light of Christian Europe. And, thirdly, he thought we ought to learn a lesson of charity. Who were we, sitting in our arm-chairs and surrounded by the checks and supports of Christian society, to judge those who were doing our work in foreign lands, in the midst of hindrances and difficulties of which we could hardly form a conception? The natural difficulties were bad enough—the difficulties of penetrating foodless forests and marshes haunted by watchful enemies—but they were as nothing to the necessity of employing as our agents men who were nothing better than full-grown and very vicious babies—men who to avoid momentary toil would throw away the arms with which they had to defend themselves and the food that was to keep them from starvation, and who to gratify a passing whim or to get a mouthful of fruit would lose themselves in the intricacies of a pathless forest at the imminent risk of death. We ought certainly to learn these three lessons; but there was nothing at all in our recent experience to justify us in withdrawing from the philanthropic enterprise of introducing Christian civilisation into Africa and of trying to rid her from the thousand curses which were darkening and desolating her life. There was abundant work for the Geographical Society to do, in spite of all the opposition which had been offered, and he trusted they would not be slack in doing it.

ARCHDEACON MAPLES'S ADDRESS.

Archdeacon **Maples** said he felt it a great honour to be called upon to speak to them about the part of Africa with which he was connected, and in which he had spent so many years of his life. It would be known to many of them that he was connected with the Universities Mission, and as the Bishop had asked of what place he happened to be archdeacon, he would inform them that he was Archdeacon of Nyasa. He had lived there for the last five years, and his present object was to tell them something of the life of the people there. It was about the east side of the lake alone that he would speak. The Bishop had very properly pointed out that one feature of savage life in Africa was that the stronger tribes were always preying on the weaker; and in no part of Africa was this more constantly to be seen than in the part of which he was speaking. They would see on the map, a little above the north end of the lake, the name of the Magwangwara tribe. With this tribe the Universities Mission has had a precarious sort of friendship for the last five years. Their mission stations had been raided by the Magwangwara, but some visits they had since paid to the tribe had resulted in a kind of precarious friendship. That friendship had been of the greatest benefit to the tribes along the east shore of Nyasa. The Magwangwara were still very wild and warlike, living only for plunder and rapine, but to a great extent they respected the mission, and were unwilling to do anything to the villages along the lake side which would bring them into disfavour with the missionaries. So this precarious friendship they had with the Magwangwara, among whom they had no mission stations as yet, they were careful to utilise for the benefit of the people along the lake with whom they had direct relations. Nyasa was 350 miles long, and about 55 miles broad at its widest. It was almost without islands. Likoma and Chisumulu were practically the only two, and on these were the headquarters of the Nyasa branch of the mission. Likoma had a population of about 3,000, which was a very large number for an island five miles long, and scarcely more than three in average breadth. They all spoke one language, and were a very quiet, peaceable people, as were also the Nyasa people along the eastern shore of the lake. The island of Chisumulu was about a third of the size of the other, and had a population of 1,200. From these two islands the Universities Mission did all it could along the lake shore to civilise and Christianise the people. They were largely helped in their work by the possession of a really fine steamer, named the Charles Jansen, named after one of their missionaries, who, seven years ago, laid down his life on the shore of the lake. The steamer enabled them to go about the lake very quickly and easily. It was a peculiar thing that all along the eastern shore the villages—or it would be more proper to call them towns—were built absolutely on the lake shores. They would see, therefore, how important to the mission was the possession of a steamer. It might be interesting to explain a little how these towns were built. The houses were the ordinary native huts, and they frequently tumbled down, and sometimes were burned down. The natives generally chose a spot where there was a large stretch of dry sand running out into the water, and immediately behind it a swamp. The swamp was a death-bringing thing to Europeans, so that it was impossible for them to settle in any of these towns. But while the swamp was death to the European it was life to the African. The Magwangwara tribe, who had been in the habit of raiding the poor Nyasa people wherever they could, carried off boys and girls as slaves, and left behind them a scene of desolation. But these swamps were a barrier the Magwangwara could not cross, and knowing this, the Nyasa natives fixed upon these spits of sand as the safest sites for their villages. The most important chief on the eastern shore of the lake was Makanjila. The only man who came near him in influence was Jumbe, at Kota-Kota. It had been specially arranged by the British Government that Makanjila should be included within British territory. It was thought that if Makanjila were included, as well as Jumbe, peace might be patched up between two chiefs who were always in a state of great jealousy against each other. He would not detain the meeting with details regarding the mission work at Likoma. A certain number of people had responded to their teaching, and a large number more were considerably under their influence. In almost every town in their district they had placed native teachers, trained at Zanzibar, and for Africans these native teachers were highly educated. They were doing good work, and in nearly every one of the towns had obtained the respect of the chiefs. The missionaries did all they could to keep the chiefs at peace with one another, and except for the fear of the Magwangwara peace did reign along the eastern shore of the lake. The missionaries were thus doing something to prepare the way for trade and commerce. In the few years he had lived at Likoma he had seen the whole population clothed. When he first set foot on the island there was hardly a piece of cloth amongst the 3,000 people. Manchester handkerchiefs and Manchester sheetings were the currency used by the missionaries, and in this way the natives had come to be clothed. The missionaries owed a great deal more to Manchester handkerchiefs and Manchester cloth than Manchester people could guess. It was their possession of goods of this kind that saved them on one notable occasion from the Magwangwara, who argued that if they destroyed the missionaries they would destroy the source from which these goods came. So the vote was given against exterminating the station of Masasi, on the principle that it would be a foolish thing to kill the goose with the golden eggs. Archdeacon Maples closed his speech with a few other details of his work amongst the Nyasa people.

MR. J. W. MOIR'S ADDRESS.

Mr. John W. Moir said he had been asked to say a little with regard to the products of Nyasaland and the efforts that were being made to make the country more valuable commercially. When the missionaries first went into Central Africa, twelve years ago, they found a country much depopulated by the slave trade, and not very fruitful. Apart from ivory and small quantities of indiarubber there was almost nothing to export from the country. The missionaries needed native labour, and paid for it in Manchester goods, so the natives looked upon them very much as traders. They were received very kindly, partly on this account and partly because they came from the country of the Makololo, who received them as the "brothers" Livingstone had promised to send. A little later the African Lakes Company came into the district and were well received, because they were considered to be the "brothers" of the missionaries. Almost the first thing which occupied the attention of the company, after the preliminary difficulties had been overcome, was the introducing of those things that ought to be sources of wealth to the natives. What he would mention first, as of particular interest to Manchester people, was the efforts made to introduce cotton into Central Africa. They found on going first into the district, as Livingstone had found before them, cotton trees in small groups round most of the villages. The dozen or so of trees belonging to each village were allowed to grow quite uncultivated, and produced cotton of a fair description, which was laboriously woven on a small frame into pieces of cloth 5½ or 6 feet long, and 3 or 4 inches broad. The African Lakes Company tried cotton seed from different countries, and one plant from Peruvian seed grew splendidly on the hills, and produced a cotton superior to the indigenous. The seed obtained was carefully sown near Katunga's, on the Shiré River, and promises well, although cotton raising is not yet beyond the experimental stage. Just before he left the district he had some difficulty in buying a piece of land for these experiments from the Makololo. He called one or two of the chiefs together and explained what the company meant to do, and how it would benefit the natives, and promised to get seeds from different parts of the world to experiment with them, and later to distribute seeds to the chiefs, that they also might grow good cotton. In addition to cotton the company had tried to cultivate various other things. They had tried several fibres, some of which seemed to be thriving excellently, and might in time be worth exporting in quantity. An experiment had been made with indigo, but unfortunately it did not seem to have succeeded, because they had had to devote all their attention for a time to the Arabs, so that in spite of considerable outlay in the indigo experiments he could say nothing definite yet as to the prospects. Among other things they had tried were tea and cocoa, but these were purely in the experimental stage so far. Several drugs had also been tried, and some promised well. Another thing was coffee, which had been a considerable success. The last year's crop sent to this country had realised 104s. a hundredweight. In 1878 the gardener of the Blantyre Mission had taken out with him to Central Africa two coffee trees from the Botanical Gardens at Edinburgh. One of them died, but the other shot up into a vigorous tree. Every single seed was planted and carefully tended, and something like 80 per cent reached maturity and bore full crops, so that before long acres and acres were planted with coffee trees. They might say, then, that coffee was a great success. The coffee was of excellent quality, but there was one serious drawback, which he hoped before long would be removed. The coffee trees ceased to bear sooner than was the case with the coffee trees in Ceylon, probably because some necessary constituent was deficient in the soil. The company had also tried to introduce various fruit trees. European vegetables had been largely grown by the missionaries and by the company, and there was no doubt that the introduction of fruit and vegetables would help to make the country not only more pleasant for Europeans but also to increase their health. The fruit trees which the company were trying had been obtained from Cape Town, Natal, Malta, Lisbon, Algiers, and other places. Some of them were thriving splendidly. In regard to the future of Central Africa he had great hopes, and in particular with regard to the district of which he was speaking; but as an honest man and a "canny Scot," he must say that in the meantime he could not endorse all that had been said by some. It was originally a poor country, although certainly increasing in value. They hoped that some of the things with which they were experimenting would turn out of very considerable commercial value. The district, too, might yield gold abundantly. At the same time it was unquestionable that the country was still rather a poor country, and needed a great deal of capital and energy for its development. He yielded to none in hopefulness as to the future, but warned them against being too sanguine. Administration in such a country should be strictly economical at the outset, and should be so planned that it should expand with its growth in wealth. The Congo Free State had burdened itself with expenses more heavily than the country could well afford; and, from what he had heard in Manchester during the past few days, he feared that these taxes might paralyse commerce. Mr. Moir afterwards gave an account of their troubles with the Arabs. When the company went into the country, thirteen years ago, they altogether trusted to the goodwill of the natives. At first they were supposed to be like the missionaries, but the natives soon learned to discriminate between them. He looked back, with thankfulness, to the fact that the men whom the directors of the company selected to begin their work were men whom the British nation could regard with pride. They went there as honest British traders, with a good reputation to maintain. They had a little advantage over the missionaries, because the natives speedily saw that a greater amount of goods passed through their hands than through the hands of the missionaries. The year 1884 was one of dreadful disaster and loss to the company. First of all, one of the Makololo chiefs was shot by a European. The natives sent to the station demanding a preposterous payment, and coupled with the demand for goods was a demand that a European woman and child should be handed over to them. Fortunately, they had fortified a house, which had been built for such emergencies; and when the native emissaries arrived they were able to make a great show of force. The letter containing the native demands was torn up before the emissaries, who were told to go back and say that such demands could not be listened to. The emissaries were so much impressed with the show of force the white men were able to make that the natives deemed it prudent not to make an attack. With the assistance of Consul Foote they were able, in the course of a couple of weeks, to make peace for a merely trifling payment. This left them with more prestige than they had before. Hardly a month passed before another blow fell upon them in consequence of the insurrection of the Machinjire, a native tribe, against the Portuguese. It was mainly through the pluck of a volunteer force, under the command of his brother, Mr. Fred Moir, that this insurrection was put down. This left them with greater prestige than ever. A little later a further trouble fell upon them in consequence of the rising of a tribe from the south-east of the lake; and then came a tremendous attack by the Arabs, which they were fortunately able to withstand, Consul O'Neill and the Rev. Lawrence Scott coming at an opportune moment to their assistance. He hoped that the details he had been able to give, with regard to the work of the African Lakes Company, were not without some interest to the commercial community of Manchester.

THE REV. D. KERR CROSS'S ADDRESS.

The Rev. D. Kerr Cross, of the Free Church Mission, said that the work in which he was engaged was on the west shore of the lake. Nyasa might well be called a great lake, for its surface area was 14,220 square miles. It was 1,600 feet above the sea level, and received the drainage of a very large stretch of country. The general configuration of Africa could be illustrated by taking an ordinary soup plate and turning it upside down. The border represented the unhealthy coast area, and the raised part the plateau country found in the centre of the continent. Along the western shore of the lake the Free Church had thirteen stations, some of them conducted by natives. The tribes along the western shore were puny, insignificant people. The influential tribes lived on the hills. The country west of Nyasa was comparatively healthy. The temperature was very equable, and the natives were exceedingly friendly to white men, and gave them every encouragement to settle in their midst. It was, however, not so much to the west shore as the north end of the lake, where he had lived for five years, that he wished to direct their attention. Some parts of Nyasaland were exceedingly fruitful, and some parts were somewhat poor. Of the north end he might say that it was to some extent an arcadia. He had seen many countries, but, perhaps, none that could beat this part of Africa, particularly after you left the north end of the lake and went towards the hill country. Consul

Johnson, at the recent meeting of the Royal Geographical Society, had spoken very highly of this country. You could walk all day long under banana trees and in the banana groves. There were thirty-two different varieties of bananas and plantains. The native houses were very well built and cleanly. When on the march he often lived in them, and found them very comfortable. The rainfall was very great over Nyasaland, and the lake received the waters of nine great rivers between Karonga and Parambira Bay. In the district of which he was speaking the people had an abundance of cattle; and one could not walk many miles without coming across great herds of these beautiful animals. The scene, on looking down upon the valleys, was pleasant indeed. Herds of cattle grazing, the herdboys playing on their pipes and cow-bells tinkling. It was indeed a pleasant land. He grew his own coffee, and eventually he would grow his own tea. Tomatoes attained the size of his double-fist. Most European provisions could be grown, and almost everything they had tried had turned out well. Cotton grew extensively. One district was very rich indeed in cotton, and you could hardly go into the village without seeing one or two African looms at work. The patterns turned out are very pretty. The country was exceedingly rich, not only in cotton but in iron. He had counted on one hillside as many as five smelting furnaces, and there was hardly a village which had not one or two blacksmiths' shops. From the geographical point of view this country was exceedingly interesting. Leaving the north end of the lake, and travelling for three days, you reached, after a stiff climb, a plateau which runs right on to the south end of Lake Tanganyika. The route was along what was known as the Stevenson Road. Within a day's march of each other were waters which ran south and west, and ultimately reached the Atlantic Ocean by means of the Congo and waters which found their way east to the Indian Ocean. The temperature was equable. There were two seasons, a season of rain and a season of dry weather. The rainy season usually began about November and lasted till the middle of April. The rainfall was upwards of 100 inches. The dry season was from May to November, but seldom a month passed during the dry season without a gentle shower of rain. White ants are found generally all over Africa, but in these uplands no white ants are found. To give an idea of the richness of the produce he might say that he could buy an ox for what cost him seven shillings, a sheep for one shilling and sixpence, and six fowls for one shilling. Food was everywhere abundant, and the natives had no difficulty in obtaining in some cases three crops in a single year. Dr. Cross gave an account of a journey he made to Lake Hikwa last November in company part of the way with Consul Johnson. The first six days of the journey were exceedingly pleasant. The country was green and fertile, and, but for the absence of country houses, might be taken for a part of England. After crossing the range which forms the basin of Lake Hikwa the aspect of the country entirely changed, and for three days they were travelling through one of the most barren deserts he had ever seen. It was with the greatest difficulty that they obtained from the natives food and water. When they had got to a point twelve miles from Lake Hikwa, Mr. Johnson was compelled to return, and Mr. Cross went on alone. He reached the lake with great difficulty. It was entirely different in character from Lake Nyasa. The water was brackish, and the sand was covered with a white incrustation, as of some kind of salt. He brought back with him from Lake Hikwa specimens of the water, the shells, and other things. Mr. Cross added a number of particulars in regard to the work of the mission with which he is connected.

Mr. J. A. BEITH moved a vote of thanks to the Mayor for the use of his parlour, and also to the three gentlemen who had addressed the meeting on the subject of Nyasa. These gentlemen, he said, were worthy successors of such explorers as Dr.

Livingstone, and were doing much to consolidate and develop the work which had been so honourably begun. We had an illustration here of missionary and philanthropic work closely allied with commerce, the one reacting on the other. He thought they should take to heart the warning given by Mr. Moir that the commercial development of the country was bound to be a work of time. Industries and habits of civilisation could not be developed in a day. If they accomplished this in a quarter of a century they would have done it quickly.

Mr. Sidney L. Keymer seconded the motion, which was heartily passed.

Mr. Sowerbutts explained that one of the three speakers had come to the meeting from Glasgow, another from Edinburgh, and the third from Sussex. They were perhaps three of the most distinguished men Britain had at work in that part of Africa.

Archdeacon Maples responded, and a vote of thanks was afterwards given to the Bishop on the motion of Chevalier Froelich, seconded by Mr. Zimmern.

The proceedings then terminated.

BOOK NOTICES.

COMMERCIAL GEOGRAPHY. TWO NEW BOOKS.

Map Studies of the Mercantile World. By John Yeats, LL.D., F.G.S., &c. 1890. pp. 336. Numerous tables. Geo. Philip & Son, London.

The Golden Gates of Trade, with our Home Industries. By John Yeats, LL.D., F.G.S., &c. pp. 354. Map, Index. Philip & Son, London.

These two books on the subject of "Commercial Instruction," are a noble addition to the handbooks on the subject already published by Dr. Yeats.

Dr. Yeats says, "Our Map Studies of the Mercantile World not only indicate the most prominent place of production . . . but illustrate the following important principles: Extremes of climate or sterility of soil must limit the returns of labour, yet not so much as mental indigence lessens the reward. Each country is considered here, primarily, from a commercial point of view, and pains are taken to show the trade division and area to which it naturally belongs, the density, and indirectly the condition, of its population, its mineral resources, its principal products, its markets, its ports, the extent of its commerce, with our particular share, and the prospects of enlargement it affords." In this volume the world is dealt with by countries, statistical abstracts of the continents are given, and a tabulated list of the produce of the British Isles.

The second volume, "The Golden Gates of Trade," treats upon the following questions in a graphic manner: Necessaries, conveniences, comforts, and luxuries; sources of supply; division of labour; rural occupations; town pursuits, markets, and trade centres; great cities and capitals; internal and external trade; ebb and flow, with circulation of merchandise; competition and co-operation; migration at home and emigration abroad; commercial site of the United Kingdom; our great oceanic communications; railway thoroughfares and trade junctions; importing and exporting; a student's requirements for business; new openings for trade; fellow traders—rivals in business; commercial facilities; studies of the United Kingdom—a key to our home trade; natural trade divisions of Europe, of England, Asia, Africa, America, and Australia; alimentary and industrial essentials, with auxiliary products of the mercantile world, &c., &c. The two books (which are sold separately) are full of suggestions for those who are able to profit thereby, and of facts which are marshalled in a striking and agreeable way to the student, the teacher, or the merchant. The books are well and clearly printed.

LOS ANGELES AND SOUTHERN CALIFORNIA:

A RETROSPECT.

By Mr. I. W. Thompson.

(Addressed to the Members in the Memorial Hall, Wednesday, Dec. 2nd, 1890.)

When I intimated to our secretary a willingness to read to you a paper upon California, the farthest idea in my thoughts was that such a prominence would be allotted it in connection with your Society's proceedings. Whilst living in that section of the United States, never for a moment did I think I should become identified in any way with the Manchester Geographical Society, else I should doubtless have provided myself, not only with photographs, but also one or more maps of the district in which I lived. Under the circumstances this is somewhat unfortunate, and to be regretted.

To many Englishmen, the very idea of journeying to California seems beset with many trials and dangers, and whilst it is impossible to measure distances with the mind's eye, it does not seem, standing as we do here, as though we had only reached the half-way house when we set foot upon the wharf at New York. Though, as I have just said, it is somewhat impossible to measure distances with the eye of the mind, it may not apply with equal force when brought into contact with circumstances or events. Some sections of the native-born Americans appear to me to be somewhat wanting in their geographical knowledge. Whether this may be attributable to their having been careless at school, or through a lack of energy in the teaching department, I do not know. It was a source of amusement to me to hear them boast of their country, and draw some of the most illiterate ideas of places of which they have often heard, but never seen. It would be invidious on my part to condemn the many for the faults of the few, and as my experiences brought me into contact with the few, I might assume that any strictures of mine might be saddled upon the right shoulders.

The American is proud of his great nation—and naturally so—yet he tries to cast a slight occasionally upon the "Old Country," as he terms it, forgetting that the *acme* of wisdom is not confined to any nationality.

The name of California has been made memorable, not because of its orange orchards, or even its canned peaches, but mainly from its gold diggings, which, since the year 1849, have been one of its great sources of wealth.

Los Angeles, or the City of Angels, is not a port, the sea being some 15 or 16 miles distant, the nearest port being San Pedro, to which the Southern Pacific Railway run trains daily. A few miles north, on the coast, stands the town of Santa Monica, which is utilised largely as a seaside bathing resort. On the sands, a little above the tidal mark, have been pitched a great number of tents, belonging to private families from the city, who go down during the hot summer season spending weeks with their friends under canvas, daily bathing in the surf of the Pacific Ocean. This has proved one method of living at the seaside, without paying any rent. In the year 1888, however, the town authorities of Santa Monica decided that no more tents should be allowed, whilst those which had been there for years were not to be disturbed.

One of the anomalies in connection with American institutions is that of politics, the strangeness being in the fact that the Republican should be so conservative, whilst the Democrat should be so liberal. I remember on one occasion putting the question to a native-born Californian, "Can you give me any information in regard to American politics?" "In which way?" I was asked. "Well," I responded, "the presidential election is coming off. A lot of you are talking of the Republican, whilst others are talking of the Democratic ticket. Americans are living under a Republican Government. What is the difference between a Democrat and a Republican?" His answer was unique, "I'm darn'd if I know." You perceive, in politics no less than geography, they are as well educated as a few Englishmen.

One feature in their characters—the women equally with the men—is a sense of independence. This is nurtured in them, and sometimes I was inclined to think it had a tendency to beget a spirit of impertinence.

We often hear of and read about American wit. My impression is that it is not generated to any extent on the Pacific slope.

The great trunk lines of railway are to be thanked for much of the push and energy displayed in the great far west. The finding of gold on the Sierras was the initiatory step in the development of this part of a great country.

Los Angeles, which bears the name of being the capital of Southern California, has now a population of from 50,000 to 60,000 inhabitants. It has been a boomed city, otherwise its progress might not have been so great. The County contains more than 100,000 population, with an area of about 2,500,000 acres. Present death rate, 12·5 per thousand. My entrance into this city was somewhat disappointing, the glowing accounts I had heard having led me to anticipate a much more beautiful appearance. On emerging from the railway station (or Depot as it is called here), on San Fernando Street, I saw before me a lot of property, principally wood-built and dirty looking, with an admixture of brick-fronted structures, the tendency of which gave a poverty-looking appearance to the wooden buildings. The wood of which they were built was of a dirty-brownish hue, and of a very coarse and brittly nature, much resembling a sort of bastard cedar. I was subsequently told it was Oregon redwood.

The San Fernando Street Depot is a wooden structure, and at this time (November, 1887) the principal station of the Southern Pacific Railway. Since then they have erected a new and modern structure somewhere, about two or two and a half miles farther west.

Los Angeles is divided into two sections, viz., Los Angeles and East Los Angeles, the dividing line being the river. The Los Angeles River is broad but shallow, no great volume of water coming down between its banks, except during the rainy season. Occasionally it has overflowed, causing a great amount of trouble to that section of inhabitants living in the lower part of the city. You see they can have floods, without coming to the "Manchester Ship Canal" to find them. East Los Angeles is principally used for residential purposes, whilst the main business section is located between the river and the centre of the city, mostly contiguous to the line of railway.

The city is surrounded on three sides with a series of low hills, ranging from two hundred to about four hundred feet high, the highest of them being at the top of College Street, and is a conspicuous landmark for miles, looking immediately over Sonora or Spanish town, a section of the city in which the Mexican and Spanish element preponderate. The clay is of a very peculiar character, and would prove very interesting to the geologist, inasmuch as it conveys the impression of undergoing a sort of transition. Some of it appears to be too hard to be clay, yet too soft to be called stone, and this is sometimes found at a depth of several feet below a bed of good loamy soil. In some patches are to be found embedded innumerable small stones, which conveys the impression of its having been subjected at some distant period to the action of the tides. This was particularly noticed in the grading of Belle-Vue Avenue above Beuna Vista Street.

During my stay some brickfields were in operation on College Street, the main labour of which was performed by Chinamen. I cannot speak very highly of the quality of the bricks themselves. They would be of no use in this country for outside work. For inner walls they might possibly do, because no difficulty would be experienced supposing you wanted to drive a few cut nails through them. Whatever faults or failings the Chinese may have, no one can charge them with laziness. Hour after hour, without a grumble or complaint, he works away, barefooted, and in a broiling summer sun, carrying six bricks at a time in his mould, whilst the moulder works as though he would lose his situation if he attempted to stop for a moment to take his wind.

Standing at the Depot, on San Fernando Street, behind which are the repairing shops of the S.P.R.R., looking citywards, you have two of these small hillocks to your right, the freight depot before you, an engineering firm and a flour rolling mill in front beyond the large freight yard, where the roads divide going up towards the city. There are three main roads, viz., Upper Main, Lower Main, and Alameda Streets. Upper Main Street branches to the right from the end of College Street, whilst Lower Main Street branches off Alameda Street, some half mile further west. Along Alameda Street the railway runs, and forms three branch lines some two or three miles distant from the old depot, one running to Santa Ana, another to San Pedro, and a third to Santa Monica. This American railway system is a thing we miss in England. With us it would be a question of building arches or else boring tunnels to carry the trains. Out West, however, they have no such embargo upon their charters, and the bell on the locomotive can bo heard clanging long before you run any risk, giving ample time to get across. On Alameda Street, at the corner of Macy Street, is an old Roman Catholic Girls' Orphanage and School, the children in which seem beautifully happy, and void of that mark in their dress which seems such a great requisite in this country to prevent their running away.

Branching off slightly to the right into Lower Main Street, we are soon at the Plaza, where the two Main streets merge. Here begins the principal business section of the city. In the centre of the Plaza or Square is a little park-like cultivated garden, encircled by iron railings, with green grassy swards and beautiful flower-beds, in the middle of which is a small fountain. To the left of the Plaza is situated a portion of China Town. To the right is a very old adobe mission church (Roman Catholic), where services are principally used for the Spanish and Mexican section of the inhabitants. At the left of the Plaza, at the end of China Town, Los Angeles Street begins, at the corner of which is one of their fire stations. Los Angeles Street contains the principal of the wholsale stores from which the retail dealers make their purchases. To the right of the square is North Main Street, with the Pico House, a fine white painted hotel.

Looking backwards over the ground you are supposed to have travelled, you see in the distance, towering above the small hillocks previously referred to, a huge range of hills some 4,000 or 5,000 feet high. In the beautiful and clear atmosphere of California these "hills," which seem comparatively very near, are about twenty miles away, whilst "Old Baldy," some sixty miles distant, does not to the vision appear farther from you than some of the Derbyshire hills do from Manchester. So beautiful and clear is the atmosphere that I have seen this mountain plainly when the moon has been at full. Other mountains, ninety to one hundred miles distant, are plainly visible further down the range. On this range of hills, in full view of Los Angeles city, is situated Wilson's Peak, upon which the University of Southern California are purposing to erect an observatory, the telescope of which will be the biggest and most perfect in the world.

Resuming our walk we pass along North Main Street, and about a quarter of a mile down the roadway narrows, Main Street going to the left and Spring Street to the right in parallel lines. Here are to be found some splendid blocks of well-built property, the only danger being the great quantity of wood utilised in the inner shell. The residential part is almost exclusively built of wood, the varied designs of which re very pleasing and chaste.

The city contains about 40 churches of varied denominations, one of which held its services in the Grand Opera House, under the ministry of the Rev. Dr. Eli Fay.

You will perhaps pardon a slight digression here. Dr. Fay was a lucky man, yet a great educationist, and whilst in California I saw it mooted he had been so prosperous in land speculations that he made a present of some 200,000 dols. to some Eastern college for educational purposes.

In connection with American institutions, you do sometimes find things which we in this country might copy, one of these being the postal department in one of its phases, viz., the *private box system.* This is quite an institution, whilst the facilities for getting your letters are very nicely and methodically arranged. I believe a new post-office has been built during the past two years. Some three years since the old post-office in North Main Street had about a thousand private boxes, the keyholders of which have their letters addressed to the number of their box, the cost of which is a nominal two or three dollars per annum. Each box has a small door, opening outwards, with a glass window, through which can be seen at a glance if there be any mail inside. There is no going inside to trouble a clerk to look for you—you look for yourself, and if you see anything, take your letters.

Americans are big boasters, but in some things my impression is that they exhibit a species of conservatism which is in no way commendable. Citizenship is the *sine qua non* in American affairs. I do not know of anything, except ability, which will prevent an American, or any other countryman, from taking up a situation in any of our public offices. Not so in California. A man cannot become a policeman unless he's an American, either by birth or adoption. The same principle carries itself in all public offices. I remember a young Englishman going to take up the subordinate position of helping a postman to carry his mail bags, when the foreman questioned him. "Mr. P., are you an American citizen?" "No," he replied. "I have taken out papers of naturalisation." "Ah, well, I am sorry, but you must quit. We don't have anyone here but citizens." It is citizenship first, competency may have to retire to a back seat. This is one of the phases wherein I think they are behind the "Old Country."

Discipline is another element wherein they are lacking. It is a common thing to see a policeman puffing a cigar whilst on duty. I have seen one, on more than one occasion, regulating traffic at the corner of Spring and Temple Streets, have to pull the cigar out of his mouth to enable him to call out to someone he thought necessitated his interference. On another occasion, when the Los Angeles furniture warehouse was burning, the chief of the fire department was coolly smoking away at a cigar, whilst directing the firemen where to play with their jets. This, I presume, must be placed down as one phase of American freedom.

Since the bursting of the boom there must have been a marked advance in security than was in operation two or three years ago. I learn from one of their newspapers that a motion had been proposed to the city council to reduce the number of police officers to 50 men, which would mean one policeman to every thousand of inhabitants, and as the city limits will be some five or six miles square, one might assume that the council were quite justified in rejecting the proposal.

Whilst living in Los Angeles I have seen Manchester newspapers containing letters which would tend to induce people living in this neighbourhood to go there under the impression that you need only set foot on Californian soil in order to make headway and save money. At the time when these roseate ideas were promulgated in the Manchester press it was quite a common thing to find the public library crowded two minutes after opening at 9 a.m., whilst a cursory glance over the elbows of the readers would satisfy anyone that the advertisement columns received the most attention. In the early months of 1888 a large meeting of unemployed men was held near the Courthouse; and a meeting of the Associated Charities was held, at which the British Consul was present, when a resolution was passed condemnatory of a movement set on foot in this district to draft off unemployed females to the Pacific coast. California needs *good practical cooks*, not washerwomen. The atmosphere is so pure and clean, the windows do not gather as much dust and dirt in a month as in this district would accrue in a week. The better class houses have all their floors covered either with Brussels or Japanese carpeting, and the major part of the washing goes to the laundry. A woman who would go and take a series of lessons in practical cookery might find not only a good home but good wages also in almost any section of the state. The woman who is not a cook had better stay at home.

The great bugbear of the place is the presence of so many Chinese. And though John is an apt learner, and very docile, they turn on him when he has served their ends and say *he must go*. They do not mean it. John is a fixture, he does not believe them, and in his want of belief acts very philosophically. He is as conservative as, if not more so than, the American Government, sufficiently to know that no necessity exists for him to go so long as he supplies a want. The papers use him and abuse him as though he was of no use to them, and it pays the proprietors to trail him before their readers, making him the catspaw to increase their sale. There is one thing, however, which they will not do—they will not boycott him. So long as a Chinese will laundry a shirt for a cent less than white labour, the shirt goes to the Chinaman, and is subsequently worn by some good Republican, who begins talking about protection and the McKinley or some other tariff. It sounds like a paradox, but a Chinaman makes a first-class washerwoman! No one realises it more than the Americans.

In connection with the newspapers an editorial freedom exists, which would fill our English law courts with actions for libel.

Much has been said in the English press about the climate of California. My impression is that it is treacherous. It is not to be wondered at that so much catarrh and rheumatism should exist, especially amongst the new comers. In the middle of winter it is as hot as we experience it in our summer months—much more so than during the past summer season—whilst the heavy dews of night are such as to drip from the leaves of the eucalyptus trees like rain drops from a cloud. During the summer season you miss those heavy sultry days and nights which in this country we sometimes experience. Almost anything in the nature of a plant will grow.

The winter time is their rainy season, and lasts from about October or November to the end of April or May. From about the end of July the whole country is of a brown and dirty hue. At this time they are in no way anxious to have visitors. After the rain comes, the face of Nature undergoes a transformation, and the hills and valleys begin to wear a beautiful greenness. You can hardly look at the wrong corner.

The whole country looks healthy and beautiful, with the exception of the dirty, muddy streets, which in the warm sunshine emit a lot of foul exhalations you would think sufficiently powerful to produce an epidemic. The rainy season is not a continued fall of rain for these months. It will rain for about a couple of days continuously, then the clouds will disperse, and for a week or two there will be fine weather. After the rain comes, the loose soil on the roads forms pools of mud, and what the earth does not drink *in* the rays of the sun evaporates *up*, and by the time the roads are nice and dry you may prepare for another dose. The green herbage is not grass—it is a sort of weed, a kind of wild mustard, after the mustard-and-cress variety, which in springtime is much used in this country; whilst another variety bears a leaf very much in design after the geranium pattern. Common horehound grows wild on some of the small hillsides, whilst cactus, of varied species, grows plentifully. The common nettle will grow to 6, 7, and 8 feet high. If you want grass you must look on the garden lawns, where it is cultivated and cared for.

What the gold fields may have accomplished for the few, fruit culture is destined to do for the many. There is no doubt but that California is about to run a close race in the markets of the world, not only in the quantity of her fruits but also in the quality of her wines. A few more years will do much in the development of her fruit trees, inasmuch as many of her orchards are as yet very young. I remember walking through two orchards, some four or five miles from the centre of the city of Los Angeles—if my memory serves me right they were on the Wolfskill Tract—on Christmas Day of 1887. A notice board was erected warning anyone from plucking the fruit, whilst beneath the trees there appeared to be millions of oranges heaped upon the ground, rotting away. In a neighbouring apple orchard there were scores of tons of apples in a similar phase of decay; and the sides of a railroad track which was being built through this section had the calcined trees and fruit mixed together, which had been cut down to make a way for the road. I thought what a pity! Yet most of this fruit, if not all of it, was not fit for shipment, else the opportunity would never have been let slip.

I should like to have said a word or two on the fruit canning industry and the McKinley Act. Time, however, will not permit it. The finest oranges in California are grown at Riverside, a young town some fifty or sixty miles from Los Angeles. Between 150 and 200 miles south is a place called Indio, where we are confronted with one of Nature's wonderful freaks. For a distance of sixty miles or more in this basin, the trains of the Southern Pacific Railway run at a level of 250ft. or more below the sea; and whilst in Los Angeles I had it told me that they had bored 1,500ft. without finding water. All along this district it is nothing more than a desert. The most thriving suburban town to Los Angeles is Pasadena, some nine miles away. Here is to be found one of the many fine hotels on the Pacific slope, the "Raymond." It is built of wood, and has a beautiful outlook across the San Gabriel valley, at which is another mission church more than a century old. This is a fine country for the naturalist. What with squirrels, rabbits, gophers, snakes, centipedes, tarantulas, coyotes, wolves, bears, ants, spiders, mosquitoes, turkey buzzards, owls, eagles, and many specimens of beautiful birds and flies, he would have ample opportunities of revelling in Nature's storehouse. By-the-by, I remember seeing a case of, not the spider and the fly, but the fly and the spider. It was observed as we were about quitting the city limits in East Los Angeles. On the ground was a big spider, with legs about 1½in. or 2in. long. About a foot away was a fly. It did not appear any larger than the spider; and whilst watching them the fly rushed up, caught the spider, and literally ran away with it. I do not think I ever regretted more than I did then that I was not possessed of a *flycatcher*.

In leaving Los Angeles I was privileged by riding on the engine for some 150 miles. The highest point the train reaches on this road is when crossing the coast range, and reaches between 3,000 and 4,000ft. When coming down the mountains, the engineer told me that in order to make eight miles as the crow flies we had to make a circuit of twenty-five miles. It was between 5 and 6 a.m. on a beautiful September morning when I was having this journey. The early morning sun lent a charm to the lovely scene, when my attention was drawn to two mountain peaks. Asked, "How far would you suppose we are from yonder mountain top?" I answered, "I do not know." "How far would you guess?" I replied, "Ten or twelve miles." Drawing my attention to the nearer one he asked, "How far do you suppose this one?" I replied "Four or five miles." To which he replied, "This one is twenty miles away, and yonder is eighty miles from us. They are called the Twins, and are 100 miles apart from tip to tip." I thought this might possibly count *one*, as I was returning home, and the good engineer little thought, at the time of telling, the possibility of his chestnut coming before a society of such importance as that of the Manchester Geographical. He might be right. All I can say is that it is hard to be believed.

And now, as I have got you from southern into central California, it would be an injustice on my part did I not thank you, and leave you in the hands of our worthy chairman.

The Moriori.—In *The Transactions and Proceedings of the New Zealand Institute, Vol. XXII.*, is a paper by Mr. Edward Tregear, on the Moriori, the original inhabitants of the Chatham Islands, which lie about 400 miles to the eastward of New Zealand. There are but twenty-seven of these people now alive, of pure descent, and five half-breeds; and the other inhabitants of the group of islands are about two hundred and fifty Maoris, and as many whites. The Moriori are akin to the Maori in appearance, and in language, though somewhat shorter and broader in person. They are remarkable for the size of their hooked noses. They do not tattoo, and do not know the art; they appear to have had a regular marriage ceremony; and they dispose of the dead in a peculiar manner. If a man celebrated as a fisherman died, the body was lashed in a sitting posture to a canoe, and sent out to sea; if the dead man had been a bird-catcher, his body was fastened to a tree with the face turned towards the place he had most hunted over in life. The women ate apart from the men. The ancient huts were either Λ-shaped or conical, and formed by bundles of poles tied together at the top. Children were baptised, with ceremonies accompanied by the planting of a tree, as in New Zealand. In 1832, two Maori tribes made a raid upon the Chatham Islands, and took possession, treating the peaceable Moriori, literally, like sheep. The Moriori traditions, justly described as extraordinary and valuable, if authentic, carry back their genealogy through 184 generations; or nearly 3,700 years, at twenty years to a generation. The roll begins with Rangi and Papa (Heaven and Earth). In the 157th generation, when Rongopapa was living, canoes arrived in the islands from Hawaiki, or Hawaii. The old chief Tapu, now living, affirmed that his people were the original children of the soil, and that the canoes mentioned were the first arrivals from Hawaiki. Mr. Tregear, however, thinks it evident from their vocabulary and songs, and their genealogy, that the Moriori came from the same far-off Hawaiki. He gives the old names of the months, all names of persons, and unlike the Maori words. One sound in these names, written *tch*, is only met with elsewhere, in Tonga, and the other Friendly Islands. There are legends of an enormous bird which once existed on the largest island. The name given to it, *Poua*, almost identifies it with the mythical gigantic man-eating bird, *Pouakai*, of the South Island of New Zealand. The home of this little people is the island of Rekohu.

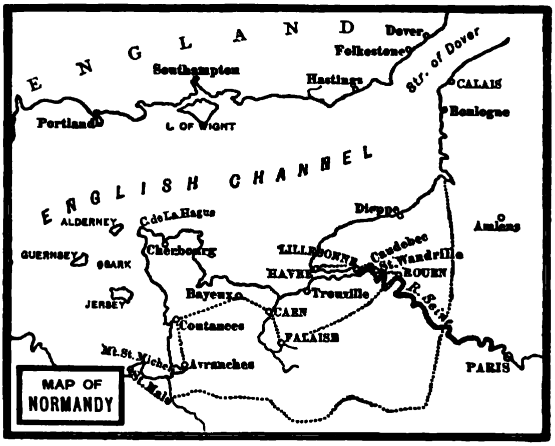
NORMANDY.—(*See Map and Illustrations.*)

By Mr. E. W. Meller.

[Addressed to the Members at the Pendleton Town Hall, Wednesday, December 17th, 1890, His Worship the Mayor of Salford in the chair.]

Comparatively few of the many travellers who go eastward and southward on their summer holiday stop to visit the picturesque scenery and quaint old towns contained in the north-west corner of France, separated from us by the English Channel.

This north-west corner of France is Normandy, a province more intimately connected with English history than any other part of the European continent. In those early days when the tide of invasion broke, wave after wave, over our island, devastating it from one end to the other, the last and most important one of all was the Norman invasion under William the Conqueror. This conquest swallowed up all that preceded it, and by slow and gradual steps led to the establishment of our present empire. Eventually the Normans became undistinguishable from the people they invaded, and, as a writer has expressed it, "Time has ripened the Brito-Anglo-Saxon-Dane-Norman into the Englishman." Now-a-days even, the people of Normandy bear a stronger resemblance to English people than those of any other French province. Another link of sympathy between us is, that in Normandy the features of the landscape are similar to those of England, hedgerows and enclosures being almost as common as with us, so much so that one Dr. Ducatel, writing in 1767, says, "Indeed, Normandy doth so much resemble old England that I could hardly believe myself to be in France."



I spent some time last summer in exploring and photographing. The sketch map herewith will enable the route taken to be followed, and the illustrations to the paper will give some idea of the large number of photographs taken in the tour.*

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*A large number of photographs were shown by Mr. Meller by a very powerful lantern, with fine effect.

I will not weary you with abstruse details as to the origin and progress of Normandy—suffice it then to say, that in 58 B.C., when Julius Cæsar resolved to conquer the Gauls, as the inhabitants of this territory were then called, he met with so fierce a resistance that the conquest occupied eight years; subsequently Diocletian made the capital of the northern province a city which is now known as Rouen—still the chief city of the province—where, as we shall see, are many Roman relics. A little later came Christianity, and Rouen was made an early archbishopric.

The Roman power gradually declined, and we find Danish and Scandinavian pirates sailing up the Seine, plundering the country and destroying the towns. These invasions seem to have been continuous until A.D. 912, when we find that Charles the Simple, King of Paris, ceded the province entirely to one of these fierce Northmen, Rollo, or Rolf, who was installed first Duke of Normandy. This Rollo was the great-great-great-grandfather of William the Conqueror—*i.e.*, five generations.

From the days of the Conqueror, Normandy remained in the hands of our Norman and Plantagenet kings until the time of King John, called Lackland, when it became a French possession.

The Province of Normandy—about 150 miles long by about 75 broad—is composed of five departments; or, may I say, counties? For our present purpose we will confine our attention to three of these departments: Seine Inférieure, lying to the north of the river Seine; Calvados, to the south of the river; and Manche, on the west side of Normandy. Let us suppose that, voyaging by the steamer from Southampton, we arrive at Havre, the Liverpool of France, then, first taking the department of the Seine Inférieure, we come to Lillebonne, remarkable for its Roman remains; thence to Caudebec, the Abbey of St. Wandrille; Rouen, the Manchester of France; thence crossing the river into Calvados to Falaise, the birthplace of William the Conqueror; thence to Caen, where he was buried; to Bayeux, famous for its ancient tapestry. Passing thence into the department of Manche we come to Coutances, and to that remarkable ecclesiastical and historical fortress perched upon the rock of Mont St. Michel.

Assuming, then, that we are arriving at Le Havre, or, as it was formerly called, Havre-de-Grace, from the Church of Notre Dame de Grace, which formerly overlooked the town, we get a fine view of the harbour and city as we enter. In the first place we have a view of the Avant Port or outer harbour, and it gives a fair idea of the great extent and importance of the port. Here we see the various steamers lying alongside the Grand Quai. Beyond this outer harbour are eight floating docks, the largest of which, the Bassin d'Eure, accommodates the splendid ships of the French Transatlantic Company. Havre is the second largest and busiest commercial port of France. Here are to be found the flags of all nations. Her principal foreign trade is with America, and we may call her the French Liverpool, not only on this account, but also because she is the port which supplies Rouen, the French Manchester, with cotton.

Havre owes its start in life to the English, for it was to oppose them that the French king Francis I. first fortified the little fishing village, than which nothing more existed until that period. Since that date Havre has continued to increase. The greatest tide of its prosperity has been since the battle of Waterloo. The population now numbers upwards of 120,000 inhabitants. The bustling streets tell of an active commerce, and contrast greatly with the sleepy air of the quaint old towns I am about to visit. In the centre of the town is one of the floating docks, the Bassin du Commerce. The quays bordering these basins are lined with vessels, and are blocked with bales, wine and sugar casks, metals, machinery—in short, goods of all kinds. The further end of this basin is principally occupied by private yachts. The great Theatre and Opera House is a large isolated building opposite one end of this basin. The Bassin du Commerce is surrounded by fine shops and brilliant cafes, in which may be heard languages from all parts of the world. At the extreme right of the basin stands the Bourse or Exchange. It is a very fine building, not quite so large as the Exchange in Manchester, but, like it, fitted with every facility for the transaction of business. The open space in front of the Bourse is a little suggestive of "the flags" in Liverpool.

Although Havre cannot boast such ancient history as the older Norman towns, it is interesting to note that the Earl of Richmond, afterwards Henry VII., embarked from here for England, with his troops, before his successful battle at Bosworth Field. Two generations later, the Huguenots placed Le Havre in the hands of Queen Elizabeth, but after a few years they slew her governor, and retook the town.

Leaving Havre, the little Rouen steamboat takes me up that magnificent water highway, the Seine. Taking the right or north bank of the river, in the department of the Seine Inférieure, after a journey of 18 miles I arrive at a high cliff, called the Nez, or Nose, of Tancarville. On the summit of this cliff, with a far-reaching view over the valley of the Seine, are the ruins of the ancient castle of Tancarville. The tower, called La Tour Coquissart, rises to a height of 60 feet, from a bower of nut trees which cluster round its base. There have been five storeys, but now only the outside shell remains; and looking upwards, when inside, the ong grass may be seen waving against the blue sky, where formerly all was closed in by the vaulted roof. Scarcely any part of the present ruins is older than the 15th century. The arches on the left are part of the old chapel, and deserve a closer examination. In the castle is a well, 300 feet deep; and deep down under one of the towers, called la Tour du Diable, is sunk a terrible subterranean dungeon, which, according to the legend, was taken possession of by the Evil One, who could not be dislodged until exorcised by the *curé*, or priest, of the village, with all the due ecclesiastical formalities of bell, book, and candle. The ivy has crept up the ancient arches of this chapel, and last summer, when I was there photographing, there was above and on all sides a rampant growth of wreathing clematis, harebells, and long-tufted grass. The chief interest in this castle of Tancarville is, that it was once the stronghold of the Tancarvilles, the hereditary Chamberlains of the Duke of Normandy, and I believe I am correct in saying that it is mentioned in Domesday Book. In a chart of Henry I. (1103) this castle is mentioned as belonging to William of Tancarville, son and successor to Raoul the Chamberlain. The present possessor is the Comte Lamberty.

A journey of five miles brings me to the town of Lillebonne, where once stood a castle, in the great hall of which William assembled his barons in council, to concert measures for the conquest of England. Imagine my dismay on arriving here to find that the present proprietor had had the barbarity to sweep away all traces of this ancient Norman hall, and on its site to build himself a stiff modern house, with little turrets and lines of coloured brick, looking for all the world like those wonderful trophies of reels of cotton, or tins of preserved meats, which one is accustomed to see at exhibitions. In the garden, however, is still left the old round tower, which I photographed. It dates from about the 15th century. The masonry is marvellous work. The stones are so evenly set that the grass cannot find a chink in which to take root. The tower is 55ft. in diameter and the old walls are 13ft. thick. It is surrounded by a moat, and passing over a drawbridge you ascend by a little corkscrew staircase, lighted by narrow slits of windows deeply splayed in the immense thickness of the wall.

But it is for its Roman remains that Lillebonne is most widely known. Julius Cæsar is said to have built a town here on the ruins of the capital of a tribe called the Caletes, and to have named the town after his daughter Julia Bona, from which is derived the modern name of Lillebonne. In the year 1812 there was excavated here in Lillebonne the remains of a Roman theatre, and all the authorities seem to be agreed that these remains are the best preserved, and indeed almost the only example of an ancient Roman theatre in the north of Europe. When we remember that it is well-nigh 2,000 years old it becomes of the most absorbing interest. The circular portion—the seats of the spectators—was for the most part cut out of the side of the hill. In the arena there was a Roman bath and a well. Between the walls is the passage to the performers' dressing-rooms. On the right was one of the entrances for wild beasts. The walls are faced with small stones, neatly jointed, behind which is flint rubble, strongly cemented, and the whole bound together at regular intervals with courses of red tiles. To quote a work on the subject, the stone employed is "a porous but coherent calcareous tufa, which is to this day deposited by the water of a neighbouring brook."

To the antiquarian this town of Lillebonne has proved a veritable gold-mine. In March, 1870, when the foundations of what is now a joiner's shop were being excavated, the spade struck a hard substance, which proved to be an ancient Roman mosaic pavement, wonderfully perfect. The Baron de Witte, a scholar learned in Greek and Roman antiquities, considers this mosaic to have been the pavement of a temple consecrated to Diana or Apollo. The subject in the compartment on the south side of the pavement is a huntsman drawing his bow to let fly an arrow at the stag, which is supposed to be running at full speed. The actual size of the figures is about 33in. high. In the centre of the pavement are two life-size figures, said to be Apollo and the nymph Daphne. The mosaic may now be seen in the Museum at Rouen. The ancient workers in mosaic must have possessed a special secret for making the cement with which the cubes are set, for it is wonderfully hard, and resists the damp, which is probably the cause of its preservation. As the pavement was not in a level position when discovered the water would easily drain off it.

Some dozen or fifteen miles from Lillebonne we come to the ruined abbey of St. Wandrille. This abbey was erected in a fertile side valley of the Seine, in the 7th century, by one Wandregesilius or Wandrille, who retired from court life to devote himself to this devout purpose. Very little more is left standing than a portion of the north transept and tower of St. Wandrille's Abbey. Until about thirty years ago stones from the abbey and pieces of sculpture were used as building material by the neighbouring country folk. The arches and columns are enough, however, to show that the original church must have been a lofty and beautiful building. The conventual buildings have been converted into a spacious mansion by the present owner, the Marquis of Stackpoole. St. Wandrille is one of the most ancient abbeys in Normandy. It was founded in the year 648, and it is interesting to note that Eginhard, the historian of Charlemagne, was a monk of this abbey. The cloister court and the cloister itself are good examples of the Flamboyant Gothic style of architecture. I may add that the cloisters of this abbey were the model for that very striking scene, where the graves open, in the French opera "Robert le Diable."

We now pass on to Caudebec, one of the most beautiful spots on the banks of the river Seine. The steamer which brought me up the river put me into a small boat, in which I was rowed to the stairs, and so reached *terra firma*. Elm trees screen the row of houses which face the river. Caudebec was anciently a fortress, and William the Conqueror appointed as its governor, Talbot, afterwards created first Earl of Shrewsbury.

Near this spot was the country seat of Victor Hugo. One day his accomplished and beautiful daughter, but lately married, came by water to market here, in Caudebec. She was returning, when the boat capsized and she was drowned. A very simple stone marks her grave in the neighbouring churchyard.

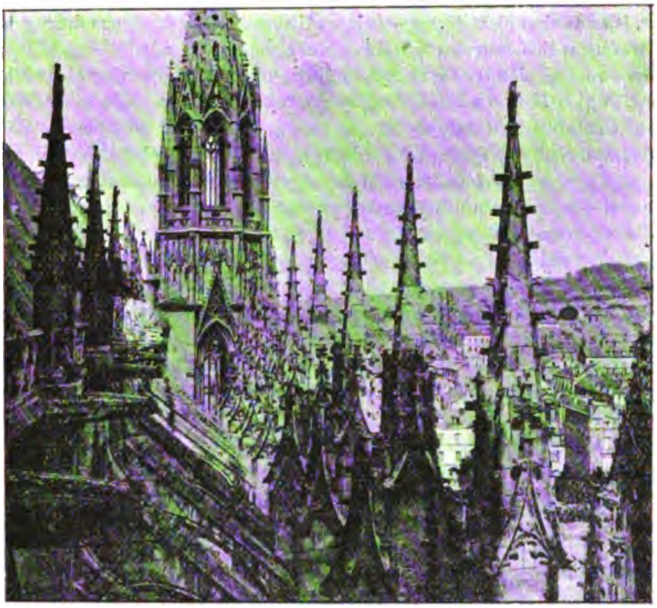
This broad river Seine bears large ocean ships past Caudebec from Havre, some eighty miles, to Rouen—the French Manchester—which therefore, you see, requires no ship canal. One evening I saw a caravan pull up in the open space in front of the river. The proprietor, in a blue blouse and straw hat, unharnessed the horses, and he and his family immediately arranged their evening meal. I could not see that he had any wares to vend, and was considerably puzzled as to his business. I found that he was a dentist, and thus travelled about to these country towns to extract his patients' teeth and cure their toothaches. He had no band of music—and his name was not Sequah!

This Caudebec is a quaint little primitive old-world town, and one of its most curious streets is the Rue de la Boucherie. The little river Gertrude runs along one side of the street from end to end. The houses project—on one side over the water and on the other side over the street—thus reminding one a little of the Rows at Chester. In the street are two very curious houses, called Les Maisons des Templiers, dating from the 13th century: their numbers are 4 and 6. Desiring to see them, I asked a woman standing at the door of her house if she could tell me where to find 4 and 6. She looked a little startled, and replied that she did not know. Then I asked her what the number of her own house was. She did not know that either, and was evidently mightily astonished at the question. I do not suppose that she is troubled with a very voluminous correspondence. I found the houses just three doors away, and came to the conclusion that I was certainly out of the beaten track of tourists. You will judge from this what a sleepy old town Caudebec is. A story is told that when the railway was projected to Caudebec the inhabitants gravely shook their heads and said, "We do very well. Why not let well alone?" It is now, however, the terminus of a little branch line, with about three trains a day.

Some pretty little cottages are situated in the outskirts of Caudebec, and the adjoining sheds contain peat for winter consumption as fuel. Spent bark from the neighbouring tanneries is compressed into cakes about a foot in diameter and some three inches thick. These cakes, or *mottes* as they are called, are stacked to dry on shelves protected from the rain, and I was told that the *mottes* make a good hot fire. Most of the coal burnt in Normandy is imported from England—the carriage therefore makes it expensive.

My landlord at the Hotel de la Marine, at Caudebec, invited me to visit a farm which he has about five miles away, at a little village called Le Trait, and to which he drives off about half-past seven in the morning, leaving madame to manage the hotel and attend to the guests. The farmhouse was interesting, but not more so than my burly host, in his shirt sleeves, puffing away at his pipe as he treated me to a cup of black coffee fortified with some calvados, a spirit of the country, and which in this case mine host had himself distilled from his own cider. I found the mixture not so unpleasant as I had anticipated! Inside this farmhouse there are many traces of antiquity, and it is interesting to note that previous to 1793—the period of the Great Revolution—it was the *paysage* where tenths were paid by the vassals or tenants to the *seigneur du pays*, who in this locality was the Duc de Cauchois. Behind is the forest of Maulevrier, from which wild boars frequently make their way to this farm, and in a single night a whole potato field is devastated, the boar always taking a straight row. The boar hunt meets at this house, and in the room through this door the walls are covered with hunting records dating many years back.

Let us now pass on to Rouen, the limit of our journey in the valley of the Seine, the ancient capital of Normandy, and now the chief town of the department of the Seine Intérieure. In its architectural triumphs of the middle ages, and in its historic associations, Rouen will yield place to no other provincial city in France. We arrive first at the Place de l'Hotel de Ville, a large open space, which enables us to get a good view of the Church of St. Ouen. This church is one of the very few perfect and completed pure Gothic edifices in France. The first stone was laid in the year 1318, and it occupied 21 years in building. St. Ouen is the largest church in Rouen, not excepting even the Cathedral. The west front has three deeply-set portals, surmounted by two flanking steeples. The centre tower, 285ft. high, is an octagon of open arches, surmounted by a crown of fleur-de-lis. After a rather tiring climb up a narrow corkscrew staircase we emerge upon the roof. Standing at the junction of the nave and south transept, and looking over the open-work parapet in a north-westerly direction, we get a birdseye view of Rouen. Down in the foreground is the Place de l'Hotel de Ville. In the middle of the Place is an equestrian statue of the first Napoleon. The conical, sugar-loaf-shaped roof seen in the distance is the Tour Jeanne d'Arc, in which the unfortunate Maid of Orleans was imprisoned. On the hill in the far distance is the Seminaire Mont Malade, a college for young men entering the priesthood. The view looking south-west from St. Ouen gives a better idea of the extent of the city. As you may judge, Rouen is a very populous city, numbering about 105,000. The river Seine, the magnificent water highway, brings the ocean ships from the sea at Havre, a hundred miles away, to this city of Rouen—this Manchester of France. Most of the mills and manufactories are situated in a large suburb on the further side of the river from this church of St. Ouen. Prominent amid this landscape of roofs stands the Cathedral. It is so closely surrounded



Rouen.—Roof of Church of St. Ouen, looking west.

buildings that it is difficult to get a good view of it. The flying buttresses are most beautiful. The original spire of stone was destroyed by lightning in 1117. It was replaced by two wooden spires, which were in turn burnt down. The present spire is of open cast-iron work. It rises very nearly 500ft., and is only some 13ft. lower than the highest pyramid in Egypt. The top of the spire is reached by 560 steps—rather a weary climb! The southern tower of the west front is called the Butter Tower, and the northern one the Tower of St. Romain, and is the most ancient part of the Cathedral. We will visit the Cathedral itself presently, and will not linger longer to discuss it now. But do not forget that all this time we are supposed to be standing upon the roof of the still larger church of St. Ouen. Before we descend to *terra firma* again, let us for the moment realise the novelty of our position. We are standing on a level with the big bell in the tower. This bell is heard all over the city, and the effect upon us, while we are in such close proximity to it, when it tolls the hour, is somewhat electrifying—at least that was my experience during the two hours I was upon this church roof taking photographs.

From a row of pinnacles spring the flying buttresses supporting the wall of the clerestory, which is also surmounted by a row of pinnacles. The pinnacles are all finished at the top with a statue. The statues include St. Ouen himself, the abbots of the Monastery, all the Dukes of Normandy, the bishops and patron saints of the diocese, and the secular founders and benefactors of the monastery. I will not enlarge upon—indeed I am not able—such matters as crockets, cusps, niches, archery, archi-volts or groins, but we cannot fail to wonder at the architectural skill which erected this splendid fabric 600 years ago.

Let us now descend into the church itself. The first point of attraction is the choir, and then the south aisle, where I would ask you to notice the long vista of lofty clustered columns supporting the beautifully-pointed arches. But let us tread softly here, for see, there are some good people at their prayers, one of them a cavalry soldier in his blue jacket and red trousers!

Leaving the church of St. Ouen we now walk through the city. When the French king, Philip Augustus, took Normandy from our King John, he built a castle, of which nothing now remains except an old donjon tower. At the time of the great revolution, 100 years ago, all the fortifications of Rouen were destroyed except this tower, La Tour Jeanne d'Arc, which you may remember we saw in the distance from the church. We English people cannot help feeling some sense of shame as we gaze upon this tower, for when Joan of Arc fell into the hands of the English, it was in this tower that she was imprisoned, and here she was put to the torture. You remember the story of the unhappy Maid of Orleans, how at the age of eighteen she went to the French king, Charles VII., telling him that in a vision from heaven she had been commanded to lead his troops to victory against the English? A poetic description of her vision is put into her mouth by Shakspere in "Henry VI.," to which let me refer you. Shakspere was scarcely fair to poor Joan, but perhaps he was only expressing the popular opinion of his day. The French king equipped the Maid with arms and armour, and she did lead his troops to victory. Eventually she was taken prisoner and tortured, in order to wring from her a confession that she was inspired by the devil. Joan was then condemned to be burnt at the stake for witchcraft. The sentence was carried out on May 30th, 1631, in the presence of the Cardinal of Winchester and many prelates, abbots, and priests, in the Square, called after her the Place de la Pucelle. As she burnt slowly and painfully, she begged for holy water, and her last words were, "Pray for me." Her ashes were cast into the river Seine. It is unpleasant to feel that this cruel execution was not an act of justice, but an act of revenge, and it is a blot upon the history of both English and French chivalry—some of her chief accusers being her own countrymen.

The rather poor modern statue of Joan of Arc marks the spot where she suffered. The French people of to-day, you notice, plant the tricolour, their national flag, at her side, and hang wreaths of immortelles about her statue. The same thing may be seen in Paris, where since the Franco-German war the figure of Strasburg, in the Place de la Concorde, is hung with crape and immortelles, thus keeping alive an old sore. A short walk from the Place de la Pucelle brings us to the west front of the church of St. Maclou, one of the Rouen churches, and the third in importance. The Cathedral ranks first, St. Ouen the second, and this Church of St. Maclou is the third. It is a fine specimen of the florid Gothic architecture of the 15th century. One artistic writer describes it as an "exquisite jewel," and indeed this church was once called the eldest daughter of the archbishop. The great beauty of St. Maclou is the triple porch. It consists of three arches, in plan like a bow window, or the half of a hexagon. Above are lofty canopies, filled with the most exquisite tracery, on the doors is most beautiful bas-relief carving. The subjects of these carvings are Scriptural. That on the central door represents the Baptism of our Lord. During the few days I was in Rouen a number of young people were being prepared in the church for their first communion. I could therefore only photograph the exterior. A few paces away from St. Maclou is another relic of bygone ages. It is a quaint archway, gate, and clock, La Grosse Horloge (the great clock). The building dates from the early part of the 15th century. From the door a staircase of 200 steps, ascends into low tower, in which is the Cloche d'Argent (the silver bell), cast in 1447. I imagine that it takes its name from the sweet mellowness of its tone, for there is no silver in the metal. It is the curfew bell, and it tolls every night at nine o'clock for a quarter of an hour. As I listened to it evening after evening, a sense of the emptiness and nothingness of the greatest ambitions of our little lives involuntarily stole over me, as I thought of the many changes and chances upon which this curfew bell has shed its tones, while ringing out its nightly duty, now for nearly 500 years. Rouen has thirty-six fountains from which the inhabitants get their water supply. The Fountain of the Great Clock has above it a curious old sculptured bas-relief representing Alphæus and Arethusa.

Continuing our walk through the city we come to the suppressed convent of Sainte Marie, a building now used by the Government as the Museum of Antiquities. Passing through a quaint old doorway and vestibule we enter the courtyard of the museum. The custodian told me that this courtyard had not before been photographed. He permitted me to do so, and I must acknowledge his courtesy. The curious array of sculptured relics with which the courtyard is filled have each of them a history. For the most part they are the remains of ancient churches long destroyed. We must not stay to recount the priceless treasures contained in this museum. There are many Roman remains, among them the splendid mosaic from Lillebonne, mentioned before. Indeed, here are to be found relics of all ages of Norman and French history. But what interested me most in this museum was a faded and considerably decayed green silk bag containing the dust of the heart of our king, Richard Cœur de Leon—the last Duke of Normandy but one. Richard loved the Normans so greatly that, as you may remember, he bequeathed his heart to Rouen.

A large building, which is now-a-days the Halle du Coton, or Cloth Hall, for the sale of the Rouen manufactures, in former times was the castle or palace of the Norman dukes. In this building William the Conqueror is said to have received the news of the death of Edward the Confessor and the crowning of Harold. Here, too, King John is said to have imprisoned and murdered his nephew Prince Arthur. The mention of this, I have no doubt, will recall to your mind Shakspere's touching scene between Arthur and his gaoler Hubert.

We are now approaching near to the Cathedral. We can here see the lofty cast-iron spire, which we saw from the roof of St. Ouen, and the northern tower of the west front, the tower of St. Romain—the most ancient part of the building—and the southern tower, called La Tour de Beurre, or Butter Tower—so called because it was built with the money paid by the faithful who purchased the Papal permission to eat butter during Lent.

The west front of Rouen Cathedral now claims our attention. This façade was built by the first cardinal—the famous Georges d'Amboise—at the end of the 15th century. It is a splendid example of the florid style of Gothic architecture. It has a true rose-window, and a true rose-window, I believe, is somewhat rare in architecture. The three doorways are ornamented with bas-reliefs, which were much injured by the Calvinists in 1562. The central design represents the genealogical tree of Christ springing from the root of Jesse. The sculpture over the door on the left is the oldest. It represents the Beheading of John the Baptist, and, when examined closely, the daughter of Herodias appears to be dancing on her head. Over the right-hand door is the Virgin Surrounded by Saints, but this has been greatly mutilated. The authorities have hung a net over the central carving, in order to protect it from injury by those spirits of mischief who delight to throw stones, also from the birds.

We now enter the Cathedral by the west door. Halting first of all in the nave, we cannot fail to be struck with its length and loftiness. It is 435ft. long by 89½ft. high, and dates from the 13th century. In passing round the choir we pause before the monument erected to our great hero of the Crusades—Richard the Lion-hearted. Richard was buried at Fontrevault, but, as you know, he left his heart to Rouen. Digging on this spot fifty-one years ago, on the 30th of July, 1838, an effigy of Richard was found, which is shown here. The immense recumbent statue, 6ft. 6in. long, dates from the 13th century. It is hewn from a single block of limestone. The crowned head rests upon a cushion and the feet upon a lion *couchant*. When found the statue was not quite perfect, and the chin, the right hand, and the sceptre in the left, have been restored in recent years. All the rest of the face and figure is 600 years old. Very near to the statue was found a double leaden box, with this inscription in black letters, "Hic : jacet : cor : Richardis : Regis" ("Here lies the heart of King Richard"). Inside the box was found a green silk bag, containing the heart perfect. The bag and the crumbling heart are, as I mentioned before, in the Museum of Antiquities.

We pass round to the Chapel of our Lady, the most richly-decorated portion of the Cathedral. The altar-piece represents the Adoration of the Shepherds. The host is contained in a golden cabinet above the altar, before which a light is continuously burning. In the Lady Chapel are two splendid monuments. One is the tomb of Louis de Brézé, Grand Seneschal of Normandy. Above the tomb is an equestrian statue of the seneschal in white marble. He and his steed are clad in armour, and are fully equipped in all the panoply of war. Below, on a black marble sarcophagus, lies a white marble figure of the seneschal, stripped entirely of everything, and dead. The moral of the two sculptures is obvious : the grim hand of Death reduces the all-powerful general and governor, covered with glory, to the same common level as the rest of frail humanity. This monument was erected in 1531, by Diana of Poictiers, wife of Louis de Brézé, and she is represented in the attitude of mourning, kneeling at the head of her dead husband. Opposite to this monument is the most elaborate tomb in the Cathedral—that of the Cardinals d'Amboise, erected in 1525. The tomb is of black marble, and upon it kneel the two cardinals, uncle and nephew, both named Georges d'Amboise. Above them is a canopy richly ornamented and gilt ; behind them is a bas-relief of St. George and the Dragon, the Virgin, St.

Peter, St. Romain, and other saints; below are exquisite white marble figures representing the cardinal virtues, Faith, Charity, Prudence, Power, Justice, and Temperance. The intervening spaces are filled with rich and beautiful arabesques. This most beautiful work is said to have cost about a million of francs, *i.e.*, about £40,000. The bodies of the cardinals were torn from the grave by the Revolutionists in 1793, the lead of their coffins melted, and their remains dispersed. We can realise the antiquity of these monuments when we remember that Mary Queen of Scots, as a little girl, may have gazed upon them soon after they were erected. I would acknowledge the courtesy of the *curé* of the Cathedral—M. l'Abbé Sauvage—in allowing me to photograph the interior.

We now bid farewell to Rouen, and with it the Department of the Seine Inférieure, and the north bank of that river. Our journey takes us across the stream into the Department of Calvados, and we arrive at the quaint old town of Lisieux—the Lexovium of Cæsar. Lisieux figures frequently in history, and, to quote one instance, I may mention that Thomas à Beckett, Archbishop of Canterbury, lived in exile here during the time he was under the displeasure of Henry II. In the Marché au Beurre, or Butter Market, may be seen one of the peculiar carts with which the farmers in the surrounding country bring their produce into the town. On market-days it is a busy scene, the ground being almost entirely covered with baskets of butter, eggs, poultry, *et hoc genus omne*, brought here for sale. Lisieux is essentially a town of curious old houses, the quaint and irregular gables of which project over the streets. In some of the oldest streets this is the case to such an extent that, looking upward, there is only a small strip of sky visible. Through the city flows the river Touques, in which the Lisieux women do their laundry-work. Although perhaps a little strange to English eyes, it is a characteristic French scene. The projecting shed-roof serves as a protection from the weather; the linen is soaped, beaten with a broad flat piece of wood called a "carosse," and rinsed in the running stream. Each woman brings her own soap, carosse, and sort of half box, in which she kneels while leaning over the river, and so keeps her skirts dry. In some instances the women pay about three half-pence a day for the use of the sheds, while in other cases they are free. We saw four women busy with their washing. The first one, kneeling behind a beam, was busily scrubbing; the others were pausing, curious to see what I was doing with the camera; the two further women had their work partly in and partly out of the water. The French seem to have a great idea of the washing being done in running water, and not everything all in the same water in the same tub.

We now journey to the ancient town of Falaise, famous in history as the birthplace of William the Conqueror. On one side of the town is the hill Mont Mirat, from which we get a comprehensive view of Falaise Castle, the early seat of the Dukes of Normandy, and in which the Conqueror was born. You probably remember how the Falaise tanner's beautiful daughter, Arlette, was washing linen in the stream which flows through this valley, just as we saw the Lisieux women doing; how the Duke, Robert the Magnificent, seeing Arlette from the corner window of his donjon keep, gazed with admiration, and fell desperately in love with her. So runs the story of William the Conqueror's parents, and the remains of a small room in this grand old Norman keep are still pointed out as that in which he was born. Before the castle became a ruin it occupied all the space now covered by trees, and on this side there are only some ramparts now remaining. In 1418, Henry V. took this castle after a four months' siege. He cannonaded it across the valley, from a point on Mont Mirat. Henry put the castle in the keeping of the Lord Talbot, and the large cylindrical tower is still called La Tour Talbot (Talbot's Tower), either because he built it or because he once resided in it. The walls of the Talbot Tower are 10 feet thick. You may perhaps be able to realise better how very massive this is when I tell you that in the thickness of the wall there is a well and a large chimney. Formerly the Talbot Tower and the ramparts were a storey higher than you now see them. At the south-west corner there was a tower, called La Tour de la Reine, or Queen's Tower, and it was at this spot that the soldiers of Henri Quatre entered the castle in 1589, through a breach made by his cannon, during the last of the many sieges which the castle has sustained, The castle, the early home of William the Conqueror, is a splendid old ruin, and is one of the finest of the few old Norman fortresses now remaining in France.

Descending from the castle into the town, we find in the Grande Place a bronze equestrian statue of the Conqueror, the great hero of Falaise, his native town. It is a powerful and spirited work. William's charger is in the act of plunging forward, and we seem to see him actually waving on his soldiers, with his uplifted hand and pennon. He is clad in a suit of chain-mail armour, and his casque is surmounted by the ducal coronet. It also has a piece of metal attached to it to protect the nose. While we gaze at the statue we are able to realise to some extent, in the words of an able writer, "The gigantic mental power of the man, who, though he could only sign his name at Rouen with a cross, could quell the power of his fierce Viking barons as well as the external foes of his dukedom, and conquer such a kingdom as England." Round the pedestal are figures of the earlier Dukes of Normandy, William's ancestors. On the left of the statue is Richard the Fearless, great-grandfather of William. Next, in the centre, is William Longsword, father of the last duke. The figure at the right corner is Rolf, or Rollo, the first Duke of Normandy. Then at the further corner, with his back to us, is Robert the Magnificent, father of William the Conqueror.

Now-a-days, Falaise is rather a dull sleepy town, but nevertheless its population numbers a good many busy workers in the cotton trade. The Rue Val d'Aute, is a street which takes its name from the small river which flows through the town. To all appearance this is a sufficiently quiet-looking street, but the amount of industrious energy concealed here would surprise you. In every house are men turning large knitting machines by hand, knitting cotton jerseys such as are worn by sailors, from large cops of coarse yarn, spun in the Rouen mills. The women are busy with sewing machines, stitching sleeves in, and finishing off the garments ready for sale. As you pass down the street you hear quite a buzz and hum from the machines at work in the houses. Some of the women bring their sewing machines out into the air. I am afraid that the lapse of centuries must have told upon the good looks of the ladies of Falaise, for I saw no young woman who seemed likely to pass muster as a modern Arlette!

After seeing the birthplace of William the Conqueror it is fitting that a Briton should see the place where he is buried. We therefore now go on to Caen, the chief town of the Department of Calvados. Caen has been described by a French writer, Madame de Sévigné, as "the prettiest town, the most inviting, the gayest, the best placed; it has the handsomest streets, the finest buildings, the most beautiful churches, meadows, walks, and, finally, it is the cradle of all our wits." Without going quite so far as Madame Sévigné, I think we shall find much to interest us at Caen.

The Place Royale has one side occupied by the Hotel de Ville, or Town Hall, over the classic portico of which the French tri-colour is waving. In this building are comprised, in addition to the municipal bureaux, a museum of pictures, a free library, the prefecture of police, and the post office. In this Place a military band plays on certain afternoons. On these occasions there is a race to occupy all the public benches, but the more comfortable cane-bottomed chairs, for which a penny or twopence has to be paid, go begging. It is, however, not so much the modern buildings which interest us, but those of olden time and historical value. Caen seems to be particularly rich in those grand and curious old houses which the good people of the 16th and 17th centuries delighted to build. As we walk up the Rue St. Pierre we cannot help pausing for a moment opposite one of these quaint old houses. The old oak beams, which form a great portion of the front, are curiously carved with bold and original designs. They are a strange contrast to the modern edifices of stucco and brick which surround them on all sides. The old carvings on these ancient houses, for the most part, are in wonderfully good preservation, and were I to attempt to describe them—the figures in ancient costume, the pigs blowing whistles, the dragons with serpents' tails, and so forth—I am afraid you would become utterly weary of listening. In an adjoining street there is still pointed out an old house which was the Caen home of Charlotte Corday.

You will all be familiar with the history of this high-souled girl, "to whom," to quote a French writer, "it only needed to have read the New Testament in place of Plutarch."

There is another curious old building in Caen, built in the reign of Louis XII., and called La Tour, or La Maison des Gendarmes, *i.e.*, the tower or house of the men-at-arms. It takes its name from the two figures at the top of the tower. They are two soldiers—armed originally one with a bow and the other with a cross-bow. They are now somewhat mutilated. This house resembles in appearance a little fortress, with its mechanical parapet and grated windows. It was not, however, built as a place of defence but as a private residence. The tower has been fantastically decorated with sculptured medallion heads of emperors, kings, generals, and so on. But these are not the most historically important buildings of Caen, and those now claim our attention.

Some years before he invaded this country, William the Conqueror built a castle at Caen in order to keep his mutinous vassals in subjection. This castle was fortified by his son, Henry I. Now-a-days it is used by the French as an infantry barracks. We can see the massive gateway of the castle, in the archway of which there generally is a sentry on guard. Below is the ancient moat, now quite dry, and turned into a vegetable and flower garden. There still remain the long projecting levers used for raising the drawbridge. In this castle it was that William, in the year 1061—five years before he came to England—ordered a bell to be rung for prayer every evening, at the sound of which all people were to retire into their houses, and close the doors. This is considered a proof that William established the curfew in Normandy before he introduced it into England. In the time of our king Stephen this castle was captured by Geoffrey, Count of Anjou; and Froissart tells us that the castle and town of Caen, owing to the cowardice of the townsmen, became an easy conquest to Edward III. and the Black Prince, just before the battle of Crecy.

A very prominent object in the town is the ancient and now disused Church of St. Etienne. This church, on the authority of some French antiquarians, is believed to be the oldest parish church in Caen, and it is said that William heard mass in this church just before starting for the invasion of England. Very little of the original fabric now remains, as it frequently suffered damage in the fierce and turbulent times of the 11th and 12th centuries, and was as often restored. The ruin now left is a fine specimen of the pointed Gothic of the 15th century, with here and there remains of much earlier work. The old boundary wall of the churchyard is of great thickness, and is about a yard thick. It was formerly fortified.

This ancient ecclesiastical building is now used by the municipal authorities as a storehouse for carts, vehicles, firewood, and odds and ends of many kinds.

When Caen is approached by water, the towers of two abbeys are seen rising in massive grandeur, one on the right and one on the left of the town. The Duke William and his Duchess Matilda were ordered by the Pope to rebuild two houses consecrated to God, one for men and the other for women, as an atonement for their somewhat irregular marriage.

They decided to build each an abbey at their favourite town of Caen, and these two abbeys, the Abbaye aux Hommes and the Abbaye aux Dames, are lasting monuments of the piety of the Conquerer and his queen. The splendid building of the Abbaye aux Dames, more than 800 years old, is a pure specimen of the Romanesque style of architecture. We read that as soon as the conquest of England was resolved upon, Matilda seems to have hastened the building of her abbey, that it might be consecrated before her husband set out on his great enterprise, and thus insure for the expedition the blessing and countenance of heaven. As part of the consecration ceremony, the ducal pair, desiring to offer a gift more costly than lands, or buildings, or jewels, dedicated their eldest daughter Cicely, as "a virgin set apart for God's service." In after days, Cicely became the renowed abbess of her mother's foundation. Inside the abbey is Matilda's tomb.

The tomb suffered much during the Huguenot disturbances, but the queen's remains were preserved uninjured, also the marble slab containing her epitaph, which has been translated thus :—

> "This stately monument, Matilda's name,
> In gold and marble, gives to endless fame;
> High was her birth, sprung from a royal race,
> To which her virtues lent a noble grace.
> When Conquering William made her England's Queen,
> T'was here her noblest, holiest work was seen ;
> This fane, this house, where cloistered sisters dwell,
> And with their notes of praise the anthem swell.
> The sick, the indigent partook her store,
> She laid up wealth by giving to the poor ;
> To heaven, by pious deeds she won the way,
> Departing on November's second day."

Queen Matilda died on November 2nd, 1083.

The conventual buildings of the Abbaye aux Dames are now converted into a hospital.

Passing right to the opposite side of the town we come to William's abbey, the Abbaye aux Hommes, which is altogether on a more extensive scale than the Abbaye aux Dames. Unfortunately it is so closely surrounded by buildings that it is impossible to get a good exterior view of the abbey. The lofty towers of the west front are very fine, and the whole structure is a splendid example of the Normano-Romanesque style of architecture. There was once a spire upon the central tower, but it was much injured by Henry V., who placed his cannon on the tower when he besieged the town. The tower was finally destroyed by the Calvinists in 1562. The ancient monastic buildings, hidden by trees, have been modernised into a *lycée* and *école normale*, *i.e.*, a college or public school.

The somewhat pretentious bronze statue standing in the open space before the railings represents the French king, Louis XIV., in the costume of an ancient Roman general. This Louis, you may remember, was a great patron of ,the dramatic art.

The nave of the Abbaye aux Hommes was begun in 1064, two years before William invaded England, and it was finished during his lifetime. I have already alluded to the motive of William and his Queen in building these two abbeys—and, indeed, carrying warfare across the sea into England was in those days considered so great and hazardous an undertaking as to call for special works of devotion. This feeling actuated not only William and his queen but also his barons and vassals. The nave, in which we are supposed to be standing, is the most ancient part of the building, and for 800 years has looked down upon the calms and the storms which have animated the bosoms of succeeding generations who have trod this sacred floor.

The choir beyond dates from the 13th century, and is therefore not quite so old as the nave. A short time ago we saw at Falaise Castle the birthplace of William; here, in his abbey church, is his last resting-place. Here, as we gaze at these ancient pillars and arches of such massive strength, and at the curves of this vaulted roof, we feel instinctively that we are in the presence of a work of consummate genius, and that this noble building is a fitting tomb for the Conqueror of England, the mighty monarch, the central pivot upon which revolves the whole fabric of our national history. Call to your recollection the circumstances of William's burial; how that mmediately he expired one son, William Rufus, hastened to England, to secure the crown; how another son, Robert, Duke of Normandy, was away at the French Court; and how the youngest son, afterwards Henry I. of England, alone was present at his father's funeral as chief mourner. William Rufus and Henry afterwards erected a magnificent tomb over their father's grave, but this was destroyed by the Calvinists, in search of treasure, 300 years ago. A plain grey marble slab at the foot of the high altar marks the place of William's grave. The simple Latin inscription on the stone runs as follows:—

Hic sepultus est	Here is buried
Invictissimus	The most invincible
Guilelmus	William
Conquester	the Conqueror,
Normanniæ Dux	Duke of Normandy,
Et Angliæ Rex	King of England,
Hujusce Domus Conditor.	Builder of this House.
Qui obiit Anno	Who died in the Year
MLXXXVII.	1087.

A walk of two miles from Caen brings us to a well-preserved Gothic abbey building, known as the Abbaye d'Ardennes, and looking at it you would say, "That is a church!" Nothing of the kind! It is only a barn, and on the day in June when I was there I saw load after load of hay carried through the beautiful portal and stacked inside the building. "To what base uses may we not return!" This fine old abbey church is now a farmer's barn, and the surrounding conventual buildings are now the farmer's house and his labourers' cottages. I made friends with the farmer's wife, who gave me a capital glass of her own cider, and after my return home I sent her a photograph of the buildings. The abbey church dates from 1121, and among the names of its benefactors are those of Richard I. and King John. The Abbaye d'Ardennes has a special interest for us, in that it was built upon very similar lines to our English Abbeys of Bolton and Newstead. The circular window, a rose with a pointed arch, is a somewhat peculiar feature, being a combination rarely met with in architecture. The monks of this abbey are said to have been very wealthy. I do not know how this may have been, but, at all events, one of the reasons for this belief was that they possessed a very large amount of cellarage for their stock of wines!

The country people of this western district of Calvados are very superstitious and have great faith in magical traditions, which have been handed down for generations. Some of these traditions are pretty and interesting, and as we wander along the bank of the river Aure towards the ancient city of Bayeux, I will instance one of them. There once lived near Bayeux a knight named Argouges. He loved, wooed, and won a beautiful fairy. She became his wife, on the condition that he was never to speak of *death* in her presence, and he was warned that if he did so she would instantly vanish. Now, one day, they were to go out together, and she was so long in getting ready that he lost patience, and forgot the warning. He called to her, "Good dame, thou wouldst be a good messenger to send in search of Death, for thou wouldst take so long on the journey!" In answer to this came a long despairing wail, and the fairy wife of Argouges faded out of his sight for ever, murmuring "Death, death." I think this old legend has an obvious moral. Husbands, don't begrudge your ladies the few moments necessary for the proper adjustment of bonnet-strings and such paraphernalia; and ladies, don't forget the gentlemen patiently waiting for you downstairs! Through the trees you get a distant view of Bayeux Cathedral. It is so shut in by buildings that it is impossible to get a near view of it from land. You see, however, the 12th century spires, on the western tower, and reflected in the water you may make out the open cupola surmounting the central tower. Bayeux is a quaint, old-world place, and in our next view we seem to have gone back a hundred years. The old-fashioned plan of street lighting is most quaint. From the top of a tall pole on each side of the street is slung a wire cord, from which is suspended an oil lamp, and similar oil lamps are suspended at regular intervals, thus illuminating the street. The streets of London, Manchester, and our large towns used to be lighted in this manner in former times, and before the introduction of gas. Compared with gas these oil lamps are not of much use. By daylight, if you are imaginative or poetic, they rather suggest the idea of a colossal spider upon one of the threads of its web, and the ease with which the lantern can be lowered explains the terrible "*A la lanterne!*" of the revolutionary times. I found some little amusement in watching the lamplighter, an old woman, who carried a smoky horn lantern, and who was accompanied by a dog. Unfastening the cord, she lowered the lamp, lighted it, wound it up again, and refastened the cord; then she went slowly on to the next lamp, and repeated the operation. Each lamp thus took from five to ten minutes to set going, and at each lamp the old woman's elderly dog had an opportunity to lie down and indulge in a short doze. Contrast this state of things with the rapid movements of the modern lamplighter.

The good people of Bayeux, in addition to being superstitious, are simple-minded, and hold in great reverence all things appertaining to Holy Mother Church. We are therefore able to see here ecclesiastical processions which have become quite obsolete in Paris and the large busy towns, and which nearly resemble those which took place in our own country in the middle ages. These processions only take place on two Sundays in the year. On the occasion of the Fête Dieu—the Festival of God or the Holy Spirit—the devout townspeople stretch long pieces of white calico or muslin, decked with flowers, on each side of the streets, which are then strewn with leaves or ferns. Here and there, in convenient positions, is erected an altar, or *reposoir* as it is termed. These *reposoirs*, or street altars, are profusely decorated with flowers, moss, foliage, candles, and ecclesiastical ornaments. The procession arrives. The host, carried in a golden vessel, by a priest in gorgeous robes, under a magnificent scarlet and gold canopy, and surrounded by acolites swinging censers of incense, is deposited upon the altar, a prayer is chanted, and the chief priest pronounces a benediction, with much swinging of incense and scattering of holy water upon the bareheaded kneeling people in the street. The procession is then reformed, and marches on until it comes to the next *reposoir*.

I was fortunate in being at Bayeux on the occasion of the Fête Dieu, on Sunday, the 30th June, when I secured a photograph of one of the *reposoirs*, that in the Rue St. Malo, before the arrival of the procession, and the crowd of open-air worshippers. The next morning, Monday, I came again to the Rue St. Malo. A wonderful change had been effected in the appearance of the street. The white cloth had disappeared from the sides of the street, and not a trace of the *reposoir* was left. There was nothing to tell us of yesterday's procession, except some heaps of leaves, which yesterday carpeted the street, but were now swept up, ready for carting away. The street had resumed its work-a-day appearance.

The tailors in this part of the world, I may remark, have apparently immense faith in the great persuasive powers of their dummy figures, for their shops are crowded, inside and out, with an array of these dressed-up blocks, of all sizes, shapes, and colours, from the elaborately-got-up masher to the nigger with a ring through his nose!

A few steps from this street takes us to the Cathedral of Bayeux, of which we had just now a distant peep through the trees. I saw the firemen of Bayeux, or the *pompiers* as they are called, attending mass in the Cathedral. They made a brave show with their fire-axes, rifles, bayonets, plumed helmets, and beating drums—the only thing they seemed short of was the fire-engine. But I suppose they could hardly take that to church with them. The three west porches of the Cathedral are built in the florid style of the 13th century, and they deserve attention for the bas-reliefs over the doors. The figures over the left door in particular are beautifully carved. They illustrate the Passion, Crucifixion, and Resurrection of our Lord. The Cathedral is famous for the capitals of its inside pillars. These capitals, 2,976 of them, are each one sculptured differently. Passing through the nave, the ancient Norman zig-zag over the arches, and the diapered patterns wrought in the walls, should be particularly noticed.

In this Cathedral the famous Bayeux tapestry was formerly kept. This ancient tapestry is, however, a document of such important historical evidence, that it is now carefully preserved in a glass case in the Museum. The Bayeux tapestry is a strip of coarse linen, 20in. broad and 212ft. long, just exactly the width of the nave of the Cathedral, across which the tapestry used formerly to be exhibited. It consists of fifty-eight subjects or pictures, representing the history of the Norman Conquest, from the death of Edward the Confessor and Harold's coronation to the battle of Hastings and Harold's death.

I will only refer to two parts, of which I obtained photographs. One is No. 23, in which Harold, when he was sent as a messenger by Edward the Confessor, is shown standing between two small altars, and taking an oath to William, who, you see, is enthroned and carrying his sword of state. The other subject is No. 35, and represents William seated in his palace, receiving the news of Harold's accession to the throne, and immediately ordering ships to be built for the invasion of England. On the right are men obeying the order, and cutting down trees with which to build the ships.

The Bayeux tapestry is generally believed to have been embroidered by William's queen, Matilda, and her court ladies. It must have been a most laborious piece of work, for it contains as many as 1,512 figures. It is nearly 900 years old, and the white linen is brown with age. The embroidery is in different coloured worsteds. It is very crude, and there is no attempt at shading or gradation of colour—thus we find a green horse next a blue or yellow one. Very possibly a good reason for this may be, that in those early days very few colour dyes were known. This ancient piece of needlework is in wonderful preservation, and is regarded by historians as most valuable evidence, not only of the events, but also of the manners, customs, and dress of that period (1066). Freeman, the historian, shows that one proof of the antiquity of the tapestry, and of its genuine connection with the Norman court of William, is that obscure persons are mentioned by name on the Norman side, of whose names and deeds there is no other historical record. Freeman inclines to the belief that the tapestry was designed by William's warlike brother, Odo, Bishop of Bayeux, as an ornament for his, then, new cathedral, and across which the tapestry just fitted, as we have already noticed. Napoleon Bonaparte caused the tapestry to be exhibited in the theatres of the French towns, with a view of inciting the people to another conquest of England, and so emulate their deeds of ancient times. The battle of Waterloo, however, put a stop to these proceedings. Some historians are disagreed as to whether the tapestry was really the work of Queen Matilda and the ladies of her court, as is generally credited. Agnes Strickland, in her work on the "Queens of England," settles this debatable matter by recommending the "lords of creation to leave the question of the Bayeux tapestry to the decision of the ladies, to whose province it belongs." And there, if you please, I will leave it!

We now quit Calvados, and entering Manche, the most western department of Normandy, we arrive at Coutances, a city which stands upon the site of the ancient Roman Constantia. A cathedral has stood here for about 1,000 years, but all traces of the original building were destroyed after the battle of Poictiers. The present building was then erected. It dates from the early part of the 13th century, and is one of the finest ecclesiastical buildings in Normandy. Repairs, of course, cannot be neglected nevertheless, I very much regret that when I was there the right-hand spire was enveloped in so much scaffolding as to prevent my taking a satisfactory photograph of the two towers and spires. They are, however, exactly alike in every detail. The west front of this cathedral towers above the surrounding houses, and from that you may be able to realise its great height. When I photographed it, the market was actively going on, but the stalls, carts, and market people seem almost too small to be noticeable.

The road from Coutances to Granville descends a steep hill to a valley; on the further side of the valley rises another hill. From hill to hill across the valley there was in ancient days a Roman aqueduct. That aqueduct was destroyed by the Normans. Another aqueduct was erected upon the ruins in the 15th century. The aqueduct was carried upon sixteen arches, of which there are only five now remaining. This ancient aqueduct is now grown completely over with ivy. The buttressed piers of the other arches, covered with ivy and creepers, still stand like a row of pillars across the valley. From this the little village which has sprung up in the valley takes the name of Les Piliers, *i.e.*, The Pillars.

We now arrive at the most westerly point of the Norman coast, and the last stage of our ramble. Out of the vast expanse of sand there rises a solitary granite rock, 300 feet high. It originated, no doubt, in some volcanic upheaval, and its very isolation in a horizon of sea and sand invests it with something of the mysterious and supernatural. According to the legend, Michael the Archangel appeared twice in a vision to St. Aubert, bishop of the neighbouring city of Avranches, and commanded him to build an abbey on the sumit of this rock. Aubert was incredulous. Then St. Michael appeared to him a third time, and repeating his command, laid his finger upon Aubert's head. Aubert, when he awoke in the morning, found a great indentation in his forehead, the shape of the archangel's finger. Believing it to be a call from God, he collected the funds, and built the abbey on the summit of this rock, which was then called, after the archangel, St. Michael's Mount.

In the turbulent times of its early career the abbey was frequently pillaged by its lawless neighbours on the mainland; and as a defence, the Mount was surrounded by a wall with bastions, and the abbey itself was fortified. We find here, therefore, the remarkable combination of abbey, church, fortress, and dungeon. It is very interesting to be able to see some of these things, and climb by easy stages right to the very top of the abbey church. At high tide the seas completely surround the Mount, sometimes even breaking into the houses. It is a most dangerous shore, for at low water, the sands are little better than quicksands, "so full of treachery," says one writer, "that a track, firm overnight, will suck in an unsuspecting traveller next morning." The tide, too, which goes out a long way, rushes in with such velocity, that if out on the sands it is necessary to run for dear life in order not to be overtaken. Many lives have thus been lost, and I will mention one case. M. de Bothmilian, an artist, was so absorbed in his sketching that he did not notice that the tide had turned, and before he could escape he was overtaken and drowned. One evening I took a stroll along this sand, and returning in a quarter of an hour I was obliged to make my way over the wooden gangway into the town. Owing to the uncertain tides and these quicksands it is unsafe to venture on the sands without a guide. A fishing gentleman, who rejoices in the sobriquet "Le Marquis de Tombelaine," was my guide. I am afraid he is rather a humbug. Ostensibly he is a fisherman, but in the tourist season he makes more money by hanging about the doors of the hotels, piloting visitors and being treated. However, he carried my apparatus in his panier, and was very useful to me. No doubt, in the off season, he has to work hard enough at his calling. When I left Mont St. Michel, we shook hands most warmly at parting. It is altogether a fishing population at St. Michael's Mount, and the women work as actively as the men.

Mont St. Michel.—Double Flying Buttress.

I was fortunate in catching a party of the fishing women just setting off to their work. I had great difficulty in making them understand me, and I could not understand a word of their dialect of French, but, by dint mostly of dumb-show, I managed to get three of them to wait a moment, until I photographed them. Their faces and limbs are a copper-coloured brown, from exposure to sun and weather. They tie a string round their skirts, and when they get out into the deeper water they just pull their skirts higher up through the string, which then holds them in that position. When they return, their catch is bought by a dealer, also a woman. The noise and din made by the women over their bargaining is something terrible to listen to; it cannot be described to ears polite. These fisherwomen earn from eighteenpence to two shillings a day.

Entering within the rampart through a little gateway, we find only one street in St. Michel. The rock was so strongly fortified, that at the entrance there are three separate gateways, each a short distance within the other. The last of these gateways is called the Town Gate, and you may still make out fragments of the old portcullis. The building over the archway is now used as a day school, in which children are taught by Sisters of Mercy. Through the archway you can see a portion of the principal hotel, justly celebrated for its omelets, and I can confidently recommend you to the tender care of the charming hostess, Madame Victor Poulard. Some curious steps lead round the schoolhouse to the abbey buildings high above us. They also lead, or rather only 105 of them, to a *dépendance* of the hotel, containing the best bedrooms, mine among them! The steps twist about a good deal, and are considerably worn, and I should think, therefore, that they would probably be rather bothering to anyone who had been spending the evening pretty freely. Climbing up the rock, we come to the subterranean portion of the abbey, or more correctly speaking, as it is high above where we have just been standing, the portion cut into the heart of the rock itself. A flight of steps at the end of a long dark passage takes us down into the marvellous Crypte de l'Aquilon. These arches and pillars, with carved capitals, date from the 12th century. Originally there stood here an altar to the Virgin, and the image of her, quite black with age, is still preserved in another part of the building. In the

Mont St. Michel.—Porte du Roi.

middle ages this crypt was turned into a prison. On the right is a pitch-dark passage, leading to horrible dungeon cells, where a ray of daylight never enters—where, too, are the fearful *oubliettes*, those terribly deep pits, in which, the prisoner once dropped, was never heard of more. Who has not heard of the iron cage of Mont St. Michel? The cage was through this dark doorway—a hollow in the thickness of the wall, closed in with iron and wooden bars, and so low that a man cannot stand upright. He must either kneel or lie prostrate. You will all remember the fate of Dubourg, a state prisoner of Louis XIV., who 250 years ago perished in this horrible confinement, devoured alive by rats.

In 1863 Mont St. Michel ceased to be a prison, the French Government transporting their convicts to New Caledonia; and in 1874 the Government declared the Abbey-fortress of Mont St. Michel a national historical monument. In the church are several remarkable old bas-reliefs, sculptured in ancient days by some of the state prisoners, who practised carving to while away the tedium of their incarceration. Having ascended into the church, we pause a moment before one of these bas-reliefs. It represents the Descent into Hades. The carving is of great age, and like some of the others is somewhat grotesque. I interpret it to mean that the Saviour is desirous of saving all those who trust in Him and his Cross, while the devil, represented in the guise of a dragon or lizard, is trying to scrape as many as he can into his net. It also suggests the interpretation that those whose faith is centred in the Saviour triumph over the powers of darkness. The carving is painted in the most vivid colours, and looks most curious and quaint. In the abbey building on the north side of the church is a noble and beautiful hall of 13th century work. It is known as the Salle des Chevaliers, and I was able to obtain a photograph of it. In the exchequer accounts of the abbey, for the year 1203, are items for the maintenance of the knights and men-at-arms kept at the monastery at the expense of the Dukes of Normandy. They lived in this Salle des Chevaliers. When Louis XI., 200 years later, instituted the Orders of the Knights of St. Michel, this splendid hall was used as their chapter-house. The hall is 98 feet long, and the elegantly-groined roof is carried upon two rows of pillars with richly-carved capitals. The huge projecting fireplace dates from the year 1496, and is so large that some twenty people can comfortably stand inside it. Standing in this grand, light, airy hall, we can realise more forcibly the horror of the gruesome dungeons deep down below us, and the atrocities which were perpetrated there.

We now go right through the ceiling of the hall into the cloisters, which are built upon the top of the Salle des Chevaliers. You notice that we keep ascending higher and higher, and here, upon the highest storey of this immense structure, we are quite 300 feet above the sands upon which we stood just now, when we had a general view of the rock. These cloisters, built between 1220 and 1228, are considered the most beautiful part of the building, and a gem of Gothic architecture. The court is the roof of the Salle des Chevaliers. Towards the court the cloisters are supported by a double row of pointed arches, resting on slim granite pillars, of which there are 200. The pillar of one arch alternates with the point of the next. The spandrels of the arches and the cornices are beautifully carved with twigs, flowers, and garlands.

The cloisters of an abbey, as you, of course, know, are a kind of passage, with a roof overhead, but open at the sides, in which the monks could take their daily prescribed exercise in the open air, and still remain protected from the weather. We can imagine the delight which, while taking their walks round this quadrangle, the old monks must have felt in the beauty of their cloisters themselves, and in the far-reaching view towards the mainland which they enjoyed from this lofty eminence.

Pleasant fellows were some of these old monks, and not altogether insensible to the good things of this world. For instance, one of them, writing of Mont St. Michel, describes it as "a little town full of honest folk, who have, however, nothing worth frying." The monks loved, and were very proud of, their rock-fortress-abbey, for it is recorded that they named it the "Palace of Angels," a title not inapt, as applicable to the summit of the granite rock on which it stands.

We finally arrive at as lofty an altitude as it is possible to attain, for we are standing upon the roof of the Abbey Church, gazing at one of the wonderful double flying buttresses of Mont St. Michel. These buttresses have been compared to a piece of lace, from their open work, and the manner in which they have been interwoven. When we consider their lightness and strength, and the intricacy of their design, we are lost in wonder at, and admiration for, the skill of the architects of those early ages. It is matter for conjecture as to how the large blocks of stone were raised to this great height above the rock. These double flying buttresses support the roof of the choir, and at this giddy height, 400ft. above the sands, the wind whistles through the open work. It is very probably owing to the enormous increase of strength given to the building by these buttresses that the fabric has been enabled to withstand the storms of centuries. Here and there plants and weeds are growing in the crevices between the joinings of the stone of this ancient building, and I have at home now some stonecrop and some valerian which grew at this spot, and which I value greatly, as coming from the highest pinnacles of the high rock of Mont St. Michel. And now, having taken you as near to the heavens as I can, I will leave you to descend to this terrestrial sphere at your own good pleasure! But with all seriousness, in conclusion, I beg those of you who possess a more intimate knowledge of Normandy than I, to look kindly upon my address this evening. In attempting shortly to describe a country so closely bound up with our national history, from which our language and literature is so largely derived, and which affords so much of deep interest to the artist, the architect, the antiquary and the historian, I cannot but feel how inadequately I have fulfilled my task, and I can only say, in the words of Shakspere—

> "Pardon, gentles all,
> The flat unraised spirit, that hath dared,
> On this unworthy scaffold, to bring forth
> So great an object."—*Henry V., I., Chorus.*

Ben Nevis Observatory.—A few years ago there was not a single high-level meteorological observatory in the United Kingdom. This want became the subject of discussion in 1877, when the late Mr. Milne Home suggested Ben Nevis as a suitable site, being the highest summit in these islands (4,406 feet) and in the track of the south-west storms from the Atlantic. On October 17th, 1884, a permanent observatory was opened, and placed in charge of Mr. Omond, of Edinburgh. The observations carried out under his superintendence, and recorded every hour in the twenty-four, have been most instructive; but Dr. Buchan points out that their value would be greatly enhanced by comparison with a companion set taken at the sea-level, whereby the condition of the intervening stratum of air, which must have an effect in checking or accelerating atmospheric disturbances, might be clearly ascertained. With the help of a grant of £1,000 from the committee of the Edinburgh Exhibition, an observatory has been erected on the shores of Loch Linnhe, and has been furnished with instruments by the London Meteorological Society. It is connected by telegraph with the one on the summit, and is in full working order, under the charge of Mr. Rankin, Mr. Omond's assistant.—

GEOGRAPHICAL EDUCATION.

REPORT TO THE COUNCIL BY THE EDUCATION COMMITTEE.

The Education Committee of the Manchester Geographical Society have been prosecuting inquiries in continuation of the report made to the Council in 1885, on the subject of Geographical Education in the district.

The following questions were asked in the first instance in relation to the question of Education, and the replies in this case are directed to the same points :—

QUESTIONS (see p. 313).

1. To what extent is Geography taught in your school or institution, and how much time is allotted to it per week? Also, is it taught as a separate subject?

2. Are prizes offered for proficiency in the subject?

3. The methods and appliances used in teaching the subject, and particularly what textbooks are used. Also, what other books or maps are either at the disposal of or employed by (*a*) the teacher (*b*) the pupils?

4. What are the special hindrances, in your opinion, to the thorough and scientific teaching of the subject?

5. If an institution, what provisions have you for Geographical lectures?

The replies on the present occasion have been as follow :—

PROFESSOR A. W. WARD, *Litt.D.*, *Principal of Owens College* (*see p.* 315).*

Owens College, Manchester, June 9, 1890.

Dear Sir,—In addition to the courses mentioned in the Report of 1886, we have now established courses of Evening Lectures on Commercial History and Geography in this College, of which that on Commercial History and that on Commercial Geography in all probability likewise will be given during the Session 1890-1. These courses will prepare candidates for the Victoria University Commercial Certificates, the requirements for which in these subjects will appear from the paper which I enclose, but they will be also suited to other hearers.

COMMERCIAL GEOGRAPHY AND STATISTICS.

(*a*) Sources of Production of (1) Chief Food-stuffs and (2) Raw Material of Manufactures.

The chief places of manufacture.

Export and import statistics: The various countries distinguished with reference to the nature of their respective trades.

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* The page numbers refer to previous communications, reports of which will be found in Vol. I. of *The Journal of the Manchester Geographical Society.*

(*b*) The Commercial Geography and Trade of England.
General outlines.
Chief agricultural, pasture, and manufacturing districts.
Coal districts.
Means of communication : Railway and canal systems.
Principal ports and commercial towns.
Trade statistics : Sources of supply, and chief foreign markets.

(*c*) The Commercial Geography and Trade, giving details, as defined in the foregoing, of *one* of the following :—

India and China.	Africa.	France.
South America.	Germany.	United States.

COMMERCIAL AND INDUSTRIAL HISTORY.

General sketch of the commercial history of England, with particular reference to the growth of industries and foreign trade since the era of mechanical invention.

The history of *one* of the following :—

1. Banking: Its nature, importance, and growth. The Bank Charter Act, 1844. Its suspension. The growth of joint-stock banks.
2. Cotton trade: Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
3. Woollen trade: Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
4. Iron and steel trade: Its growth, chief localities for manufacture, markets, and sources of raw products. The commercial organisation.
5. Some other trade to be approved by the Board of Studies.

I may add that Physiography is now one of the optional subjects for the preliminary examination of candidates for the Arts and Science Degrees of the Victoria University.

The establishment of a permanent Lectureship in Geography at this College remains a project only, but the time may not be distant when it will be realised, perhaps with the help both of the Royal Geographical Society, which looks favourably upon the scheme, and of our own Society in Manchester.

REV. M. G. GLAZEBROOK, M.A., *Head Master of the Grammar School, Manchester.*

Dec. 4, 1890.

Dear Sir,—I will answer your questions in order, but pressing engagements compel me to be brief. (1) Throughout the lower school, which contains nearly two-thirds of the boys, geography is taught as a special subject twice a week. In the upper part of the classical side some ancient geography is taught, mainly in connection with history. In the upper part of the modern side we are just making a change, and the teaching in future will be on the lines laid down by the syllabus issued by the Manchester Chamber of Commerce. (2) There are no special prizes for geography. (3) In the lower school we use some of the text-books published for the use of elementary schools, but the masters supplement these largely by oral teaching, and by constant reference to the wall maps, of which we have a good supply. In the upper part of the school the teaching is mainly oral. I am afraid I cannot undertake to give you a list of our maps, or of the geographical works in our library. (4) The great obstacle to the teaching of geography seems to me to be the want of a definite conception in the public mind as to what that subject includes, and what kind of results are to be aimed at. At present geographical text-books, which more or less represent the public mind, are generally a jumble of geology, anthropology, politics, commerce, and map-making, arranged on no definite principle. If the province of geography could be clearly defined the work of the teacher would be mnch simplified.

MISS ELIZABETH DAY, *Head Mistress of the High School for Girls, Dover Street, Chorlton-on-Medlock, Manchester* (*see p.* 319).

May 24, 1890.

Dear Sir,—We have added a few geographical books to our library since 1886, but have made no other change worth mentioning. The school is closed till Tuesday week. I will send you the names of the new books when it re-opens, but if you want to reprint before that, my answer will do as it stands. It is still substantially correct.

The HEAD MISTRESS *of the Training College for Women, Liverpool* (*see p.* 319).

Training College, Mount Pleasant, Liverpool.

Dear Sir,—I am directed to thank you for the copy of the report on Geographical Teaching, and to inform you that the answer on page 10 still holds good in substance.

MR. J. J. CARDWELL, *Professor of Commercial Geography and History, St. Bede's College.*

St. Bede's College, Manchester, June 6, 1890.

1. (*a*) Taught in all the forms throughout the college. Time averages three hours per week.
   (*b*) Taught as a separate subject.
   (*c*) Range of teaching. (See enclosure A.)
2. (*a*) Yes. General Geography enters like any other subject into all competitions, such as the *daily marks*, and also the annual *form prizes*, prizes for individual subjects not being awarded in any case.*
3. (1) *Textbooks:* General Geography used in all the forms, Chisholm's "School Geography" and "Questions" (Longman's). Commercial Geography, Casartelli's "Notes on Commercial Geography." Cardwell's "Introduction to Commercial Geography, Map Drawing, and Projection from Memory" (John Heywood's).
   (2) *Maps:* A selection of maps are hung in the corridors and classrooms, and always used in teaching geography. (See enclosure B.)
   (3) At disposal of (*a*) Teachers, any work on Geography useful or necessary for preparing lectures. (*b*) Pupils: In the reading-room a case is set apart for books of travel and works of a geographical nature (about 50 volumes). (*c*) Want of good and *sufficiently cheap* physical or orographical wall maps, and especially relief maps. (*d*) Multiplicity of subjects, rendering it impossible ever to give more time to Geography than at present given.

**Examination prizes* can be obtained in four branches of subjects, viz., *Branch* A, *English subjects*, embracing reading, writing, spelling, composition, précis, English grammar, English literature, history of the English language, English by heart. *Branch* B, *commercial subjects:* Arithmetic, bookkeeping, commercial lectures, and political economy. *Branch* C, humanities, embracing the modern languages, Latin, history, *geography*, &c. *Branch* D, *Science and Art*, algebra, Euclid, trigonometry, freehand and geometrical drawing, and vocal music.

ENCLOSURE A.

SYLLABUS OF COURSE OF COMMERCIAL AND APPLIED GEOGRAPHY.—SESSION 1889-90.

FIRST YEAR.

A.—An Elementary Course of Applied Physiography, explanatory of the circumstances of every-day life, navigation, trade, and commerce, with a simple, yet more detailed, account of the following:—

1. Astronomical basis of Commercial and Applied Geography:—
    (*a*) Form of the earth—Determination of the unit of distance in space—Measurement of the exact form of the earth — Practical consequences of the form and size of the earth.
    (*b*) Motions of the earth and the resulting consequences:—
        (1) Rotation—Determination of the unit of distance in time—Correlation of the units of distance in time and space—On finding the longitude—Application of latitude and longitude to finding the time, position, and course of the navigator at sea or the traveller on land—Practical use of the sextant, theodolite, and altazimuth instruments — Principles of surveying and mapping a country or district.
        (2) Rotation and revolution—Seasons and climates.
        (3) Rotation, gravitation, &c.—Tides, trade winds, and ocean currents.
2. Physical Basis of Commercial and Applied Geography:—
    (*a*) Climates and the geographical distribution of plant and animal life.
    (*b*) Soil and the localisation of agricultural and other industries.
    (*c*) Rocks, and the minerals obtained from them, with a study of the dependent industries.
    (*d*) Rivers and mountains in their economical and commercial aspects.

B.—Physical and Economical Geography and Commercial History of—

1. Manchester, with a particular account of the industries and trade of the district.
2. Lancashire, illustrating the laying of the foundations of modern trade and commerce, or the rise and development of the textile manufacturing industries, especially cotton, and the rise and development of modern means of communication, especially the railway.
3. Great Britain, with a study of the rise and development of our commercial supremacy.
4. Ireland, as a dairy country and produce provider for Great Britain.

C.—Practical: The Study and Examination of Actual Specimens of the various Materials of Commerce—in their raw state, in the progress of manufacture and as finished goods, which enter into the trade and commerce of the different countries under review.

SECOND YEAR.

A.—1. Brief Review of the Previous Course, with special reference to the study of New Countries on the principle of comparison and contrast.

2. Physical and Economical Geography and Commercial History of Europe and the European States, with a particular account of the following selected countries:—

(*a*) Our great European industrial and commercial rivals—France and Germany.
    (1) France, as an agricultural country, contrasted from an economical point of view with Great Britain, a manufacturing and mining one.

  - (2) Germany, illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League and the modern Zollverein, with special reference to the commercial federation of the British Empire.
- (*b*) Denmark, contrasted with Ireland as a dairy country and produce provider for Great Britain, with a study of the reasons for the excellency of its products.
- (*c* Portugal, and the effect of the recent political disturbances on our trade and commerce with that country, and its political offshoots.
- (*d*) The Balkan Peninsula and the Eastern question from a commercial point of view—
  - (1) Old Turkey, New Europe, and the highway to India.
  - (2) Greece, or the Britain of the Mediterranean. The lessons to be learnt from a study of the rise and decline of its colonial and commercial supremacy in the past, with the application of these lessons to the case of the colonial and commerial supremacy of Britain in the present.

B.—An Elementary Course of Geographical and Economic Botany.

C.—Practical, as before, including the Botany.

THIRD YEAR.

A.—1. Brief Review, &c., as before.

2. Physical and Economical Geography and Commercial History of—

- (*a*) Our Indian and Colonial Empire, with a study of
- (*b*) The principal means of communication, in the light of our colonial supremacy and the commercial federation of the British Empire; also in 1889-1890 a particular account of (i.) Canada, (ii.) South Africa, and (iii.) Australasia, as sources of raw materials, markets for finished goods, and fields for emigration.

B.—An Elementary Course of Geographical and Economic Zoology.

C.—Practical, as before, including the Zoology.

FOURTH YEAR.

A.—1. Brief Review, &c., as before, with special reference to a Short History of the Colonies and Commerce of Ancient Times.

2. Physical and Economical Geography and Commercial History of Asia, Africa, America, and Oceania, with, during the present session, a particular account of—

- (*a*) Our Eastern markets—India, China, and Japan—their present state and future prospects.
- (*b*) The opening-up of Persia to Western commerce and civilisation.
- (*c*) Russian influence in Western and Central Asia, and its effect on British trade and commerce.
- (*d*) The commercial future of Africa.
- (*e*) The United States of North America as our provider, best customer, and greatest rival.
- (*f*) Brazil, its coffee and cotton, with a study of the effect of the emancipation of the slaves of that country on its industry, trade, and commerce.

3. A detailed study of the Commercial and Applied Geography of the British Isles.

B.—The Geography and Trade in some Selected Product of Commerce during 1889-90—Tea and Cotton—comprising a study of the sources of the raw material; the producing countries; capacities of newly-settled lands; the home market, its character, extent, and requirements; colonial and foreign markets, their geography, number, extent, and requirements; competition with other nations—exports, imports, statistics, and production; daily newspaper weather reports, and their effect on produce, markets, and prices; freight markets, &c.

C.—Practical, as before, including the Selected Products.

FIFTH YEAR.

A.—1. Brief review, &c., as before, with special reference to a History of the Colonies and Commerce of Mediæval and Modern Times.

2. A detailed study of the Commercial and Applied Geography of Europe.

B.—A Course of Geographical and Economic Geology.

C.—Practical, as before, including the Geology.

SIXTH YEAR.

A.—1. Brief review, &c., as before, with special reference to the study of Contemporaneous Commercial History.

2. A detailed study of the Commercial and Applied Geography of Asia, Africa America, and Oceania.

B.—Cosmography, with a course of Nautical Astronomy and Navigation.

C.—Practical, as before, including Microscopic Manipulation, with a view to the detection of Adulteration, various methods of examining Food-stuffs, Fabrics, Fibres, Wools, &c.

TEXTBOOKS FOR PREPARATION OF LESSONS.

(*a*) Map Drawing—Cardwell's "Introduction to the Study of Commercial Geography."

(*b*) Physical and Economical Geography—Chisholm's "School Geography and Questions."

(*c*) Commercial Geography—Casartelli's "Notes on Commercial Geography" and Chisholm's "Handbook of Commercial Geography."

(*d*) Commercial History—Yeats's Manuals of Commerce.

N.B.—In no case, however, is the student to depend on the textbooks alone for his information, but should make maps and take notes of the lectures, filling the information there obtained by reading selected passages from the works in the Museum Library, a catalogue of which is to be found in *The Manchester Geographical Society's* Vol. V., pp. 227-230.

ENCLOSURE B.—MAPS IN USE.

1. Astronomical Diagrams. Reynolds.
2. A View of Nature in all Climates. Reynolds.
2*a*. A View of Nature in Ascending Altitudes. Reynolds.
3 Geological Diagrams. Reynolds.
3*a* Geological Chart. Reynolds.
4 Manchester and District, showing Advantages of Ship Canal.
4*a* Greater Manchester. Heywood.
4*b*. Mersey Basin. "World" Series. Ruddiman Johnston.
4*c*. Mersey Basin. Blank. "World" Series. Ruddiman Johnston.
5. Lancashire. Collins.
5*a*. Lancashire. Blank. Ledsham.
6. British Isles, Orographical. Stanford.
6*a*. British Isles, Geological. Stanford.
6*b*. British Isles, Political. Hughes (Philips).
6*c*. British Isles. Blank. Betts.
7. England and Wales. Series of maps, Physical, Political, and Economical "World" Series. R. Johnston.
7*a*. England and Wales, Political. Hughes (Philips).
7*b*. England and Wales, Political. W. and A. K. Johnston.

8. Scotland. "World" Series. Physical, Political, and Economical. R. Johnston.
8*a*. Scotland. Blank. Betts.
9. Ireland. "World" Series,
9*a*. Ireland, Political. Hughes (Philips).
10. Europe, Orographical. Stanford.
10*a*. Europe. "World" Series of Physical, Political, and Economical maps.
10*b*. Europe, Political. Hughes (Philips).
10*c*. Europe, Political. W. and A. K. Johnston.
10*d*. Europe. School maps. "Sanctuary."
10*e*. Europe. Blank. Betts.
11. Belgique. Bruxelles : Dosseray, 1884.
12. World, Physical (Mercator). Keith Johnston.
12*a*. World, Commercial (Mercator). Keith Johnston.
12*b*. World, Hemispheres (large). Hughes (Philips).
12*c*. World, Hemispheres (large). Stanford.
13. British Empire.
13*a*. British Empire on Uniform Scale. "Sanctuary."
14. Dominion of Canada (very large Government map). Dep. of Railways &c., 1882.
14*a*. Dominion of Canada (School map). Ruddiman Johnston.
14*b*. Dominion of Canada. "World" Series of Physical, Political, and Economical maps.
15. Cape Colony. "World" Series of Physical, Political, and Economical maps.
16. Australia. "World" Series of Physical, Political, and Economical maps.
16*a*. Australia, Excelsior. Bacon.
16*b*. Australia, Political. Ruddiman Johnston.
17. New Zealand. "World" Series.
17*a*. New Zealand, Political. Ruddiman Johnston.
18. Fiji Islands. "World" Series.
19. India. "World" Series, comprising—
    (*a*) Map of Coastline and Rivers.
    (*b*) „ Physical Features.
    (*c*) „ Provinces and Feudatory States.
    (*d*) „ Provinces and Chief Towns.
    (*e*) „ Provinces and Chief Towns (Test).
    (*f*) „ Density of Population.
    (*g*) „ Industrial, Agricultural, and Minerals.
    (*h*) „ Railways and Carriages.
    (*i*) „ Meteorological.
    (*j*) „ Indian Ocean.
19*a*. India, Political. Ruddiman Johnston.
20. British Possessions in Europe. "World" Series.
21. British Possessions in Asia.
22. British Possessions in Africa.
23. British Possessions in America.
24. Asia. Excelsior Series. Bacon.
24*a*. Asia. "World" Series.
25. Africa. Excelsior Series. Blank. Bacon
25*a*. Africa. "World" Series.
25*b*. Africa, School. "Sanctuary," 1880.
25*c*. Africa. Keith Johnston, 1879.

26. North America, School. "Sanctuary," 1880.
27. United States. R. Johnston.
28. South America, School. "Sanctuary," 1880.
29. South America. "World" Series.
30. Chili. Valparaiso.
31. Yeats's Commercial History. Maps and charts.

ENCLOSURE C.—BOOKS AND ATLASES.

A complete list of the Works in the Museum Library was given in *The Journal of the Manchester Geographical Society*, Vol. V., pp. 227-30.

ENCLOSURE D.—COMMERCIAL AND GEOGRAPHICAL MUSEUM.

A catalogue of the Museum was given in the Journal, as above, pp. 222-227 Also a list of cards of the "Musée Scolaire" (*Ibid. p.* 230).

MR. C. H. WYATT, *Clerk to the Manchester School Board* (*see p.* 324).

Manchester School Board, Deansgate, Manchester, May 23, 1890.

Dear Sir,—In reply to your letter of the 21st inst., asking for further information relative to the teaching of geography in the schools conducted by this Board, I write to inform you that last winter the Board arranged for a course of lectures in Commercial Geography in connection with their Commercial Evening School.

I believe that these lectures were well attended and very much appreciated. I enclose a copy of the prospectus of the Commercial Evening School, which gives a syllabus of the lectures. Any further information that you may require I shall be happy to supply.

[EXTRACT.]

Commercial Geography and History: During the session a course of 20 lectures will be given by Mr. J. J. Cardwell, commencing Friday, October 11, 1889.

Commercial or Economical Geography, as contrasted with General Geography, may be defined as the department that deals with the geographical distribution of commercial products—chiefly food products, raw products, and manufactured products.

It implies a knowledge of (1) the localities where, and the conditions under which, these are produced; quantities available for export; the capacities of new countries like Africa and Australia for commercial development; (2) the various facilities and hindrances to trade, so far as these are geographical; political and social characteristics likely to affect trade; communication by land and sea, &c.

Commercial History treats of the acquisition and diffusion of wealth among nations as the result of industry and enterprise. It records the vicissitudes of trade, and compares the burdens and resources of modern States in various ways, &c.

It should, however, be borne in mind that commercial or economical geography can never be satisfactorily studied without a sound knowledge of physical geography which underlies it. Intending students will do well, therefore, to peruse one of the numerous textbooks on physiography or physical geography, which can be seen in all the public free libraries. They should also provide themselves with a flat rule, pencil, compass, and notebook, for making maps and taking notes. (*Abridged Society of Arts Syllabus.*) In illustration of the above syllabus, the following subjects and substances will be lectured upon, particular attention being given to those facts in the history of each country for which the peculiar circumstances of its geography have rendered it especially noteworthy, as indicated below:—

I.—Economical Geography and Commercial History of Countries.

1. Lancashire, illustrating the laying of the foundations of modern trade and commerce; or, the rise and development of the textile manufacturing industries, especially cotton; and the rise and development of modern means of communication, especially the railway.

2. Great Britain, with a study of the rise and development of our commercial supremacy.

3. Our great industrial and commercial rivals—France, Germany, and the United States.

(*a*) France, also as an agricultural country, contrasted from an economical point of view with Great Britain, a mining and manufacturing one.

(*b*) Germany, also illustrating the advantages and disadvantages of such commercial combinations as the old Hanse League and the modern Zollverein with special reference to the Federation of the British Empire.

(*c*) United States, studied as our provider, best customer, and greatest rival.

4. Selected foreign countries as rival producers, sources of raw materials, markets for finished goods, or fields for emigration.

5. Selected British colonies or possessions as rival producers, sources of raw materials, markets for finished goods, or fields for emigration.

6. The Balkan Peninsula and the Eastern Question:—

(*a*) Old Turkey, New Europe, and the Highway to India.

(*b*) Greece, or the Britain of the Mediterranean; the lessons to be learnt from a study of the rise and decline of her colonial and commercial supremacy in the past, with an application of these lessons to the case of the colonial and commercial supremacy of Britain in the present.

II.—Economical Geography and Commercial History of Products.

1. The raw materials of commerce—their source, use, distribution, and commercial history generally, with the following specially:—

2. Bread plants, with the trade in grain.

3. Beverage plants, with the trade in tea, coffee, cocoa.

4. Clothing plants, with the trade in cotton and linen goods.

The lectures will be fully illustrated by maps, plans, and diagrams; and with specimens of the materials of commerce in their raw state, in the progress of manufacture, and as finished goods.

REFERENCES.

(*a*) Geography: Yeats's "Natural History of the Raw Materials of Commerce"; Casartelli's or Zehden's "Commercial Geographies"; Johnston's "Multum in Parvo Atlas," or Longman's "New Atlas."

(*b*) History: Yeats's "Growth and Vicissitudes of Commerce," "Recent and Existing Commerce," "Technical History of Commerce"; Johnston's "Statistical Atlas of Commercial Geography"; Fawcett's "Political Economy for Beginners."

Two prizes will be offered in connection with this subject.

Mr. J. G. C. PARSONS, *Clerk to the Salford School Board* (*see p.* 324).

Town Hall Buildings, Salford, 23rd May, 1890.

Dear Sir,—In reply to your letter of the 21st instant, on reading over the answers that I gave you in 1885, as they appear in your printed report, I do not find it necessary to make any alteration, except that when the new Code comes into force, English will no longer be obligatory as a class subject, and it will therefore be possible to teach geography in schools where circumstances make it undesirable to take only one class subject.

MR. E. M. HANCE, *Clerk to the Liverpool School Board* (*see p.* 325).

Municipal Offices, Liverpool, 2nd June, 1890.

Dear Sir,—In reply to your letter of the 21st ultimo, I beg to inform you that so far no modification has been made in respect of the instruction in geography given in this Board's schools.

We are proceeding upon the same lines up to the present, but it may be that in the light of the new Code some modifications will be made in the Board's general scheme of education.

MR. THOMAS R. JOLLY, *Secretary to the Harris Institute, Preston* (*see p.* 327).

Harris Institute, Preston, June 4, 1890.

Dear Sir,—We have had a course of 20 lectures on commercial geography, conducted by Mr. John J. Cardwell, of St. Bede's College, Manchester. The class meets once a week, the time allotted being 1½ hour.

Prizes are offered to candidates who pass the examination.

The textbooks in use are: The "Geography and Natural History of Raw Materials of Commerce" (G. Philip and Co., 1887); Casartelli's "Commercial Geography" (Simpkin, Marshall, and Co., 1884); and the lectures have been fully illustrated by maps, plans, diagrams, and specimens.

The class has not been attended by many students, and has not met with the encouragement it deserves.

MR. AUSTIN KEEN, *Secretary to the Technical School, Huddersfield.*

Dear Sir,—Since the time of your visit and advice respecting the purchase of maps we have continuously and systematically taught geography in our evening classes. We acted upon your advice as to maps completely, and we are fully satisfied with, in fact proud of, them. Geography is taught as a separate subject, in two stages, and the time allotted to it is four lessons (two in each stage), of three-quarters of an hour each. The numbers attending are about 75, and we group the subject with shorthand, bookkeeping, arithmetic, correspondence, and writing, as particularly useful to young men just entering upon commercial life.

Dec. 3, 1890.

MR. LEONARD H. EDMINSON, M.A., *Head Master of the Old Trafford School, Manchester* (*see p.* 329).

Old Trafford School, Manchester, September 20th, 1890.

Dear Sir,—In answer to your question whether I care to add anything to my few remarks made in 1885 on the teaching of geography, I beg to say that the report issued by the Manchester Geographical Society has been of considerable service in focusing the best opinion on this subject, and in suggesting improvements in method, and in the textbooks, &c. used. I can only emphasise the difficulty expressed by so many of the great range of subjects which one is called upon to teach, and of the impossibility of finding time to do anything like justice to them.

There is the additional difficulty that one is expected to turn out boys fully equipped at the age of fifteen.

In many of these cases it seems as if one must be contented with no high standard of attainment, but simply seek to create an intellectual interest which will lead to a striving after knowledge in the hours of leisure from business. In no subject have I found this more easy, perhaps so easy, as in geography.

It would be difficult to sketch out any programme that would be more attractive to a boy's mind than the one detailed by Professor Boyd Dawkins on page 7 of the Manchester Geographical Society's Report, 1886. These "principles" of geography, if they may be so called, seem to have a wonderful interest for boys, from the youngest upwards, especially as many of them can be illustrated by occasional excursions into the country. *Apropos* of this I may say that a capital lesson in geography may be given on the top of an omnibus running the length of the Liverpool Docks.

I have encouraged stamp collecting, too, chiefly because it aids in creating an interest.

We need, greatly, more pictures (the few in Longman's New Atlas have been a help), and, above all, abundance of lantern slides. I should like particularly to urge this point.

With regard to textbooks, they all err in giving too much detail, or perhaps it is we who err in requiring too many minutiæ to be committed to memory. They prove a great burden to a boy, are often unimportant and soon forgotten, and are not essential to thorough and accurate work.

Lastly, I may add that recent events in Africa have given an impetus to the study of geography, and the same may be said of our Ship Canal.

MR. J. HALL, M.A., *Head Master of the Hulme Grammar School* (*see p.* 333).

The Hulme Grammar School, Alexandra Park, May 8, 1890.

Dear Sir,—Geography is taught as a separate subject to every form in the school. Two hours per week are allotted to it. In the three highest forms it is taught by a master who has made a special study of it—in other forms by the form master.

Special prizes have been given for maps done in the summer holidays. The marks given for term work in the subject count in the awarding of form prizes.

Nelson's "Geographical Readers" are found useful textbooks. They are supplemented, especially in the higher forms, by selections from Stanford's "Compendium" and other works. The physical features and the commercial importance of the countries studied have special attention. There is a large and well-chosen series of the best maps procurable (see list appended) and a set of Hölzel's views. Map drawing is taught, especially drawing from memory, on simple projections, with correct latitude and longitude.

The subject seems to me to have its fair share of time attention.

LIST OF MAPS.

1. The World, Mercatór's Projection. Christian Brothers Paris. No date.
2. Africa, Physical. Kiepert, Berlin. 1885.
3. Asia. Kiepert, Berlin. 1884.
4. Asia, Physical. Von Sydow, Gotha. No date.
5. South America. Kiepert, Berlin. 1886.
6. North America. Kiepert, Berlin. 1886.
7. United States. W. and A. K. Johnston, Edinburgh. No date.
8. Australia and Polynesia. Von Haardt, Vienna. 1885.
9. New Zealand. Hector and Bowden, London. No date.
10. East Indies. Bos and Rijkens, Gröningen. 1881.
11. Europe. Levasseur, Paris. 1885.

12. Europe, Physical. De Angeli, Milan. No date.
13. Central Europe. Steinhauser, Vienna. 1877.
14. Austria. Von Haardt, Vienna. 1885.
15. Germany. Kiepert, Berlin. 1883.
16. Italy, Physical. Carabelli and De Angeli, Milan. No date.
17. Alps. Randegger, Winterthur. No date.
18. Scandinavia. Roth, Sweden. No date.
19. Holy Land. Clark, London. 1886.
20. French Colonies. Levasseur, Paris. 1879.
21. British Colonies and Possessions. Stanford, London. 1885.
22. England and Wales. Hughes, Liverpool. No date.
23. Scotland. Hughes, Liverpool. No date.
24. Ireland. Hughes, Liverpool. No date.
25. Lancashire and Cheshire. Philips, London. No date.
26. Græca Antiqua. Kiepert, Berlin. 1887.
27. Italia Antiqua. Kiepert, Berlin. 1883.
28. Western Palestine. Conder and Kitchener, London. 1881.
29. St. Paul's Journeys. W. and A. K. Johnston, Edinburgh. No date.
30. Alps. (Small.) Seven. Artaria, Vienna. 1881.
31. France. Six. Vidal Lablache, Paris. No date.
32. Greater Manchester. John Heywood, Manchester. No date.
33. Geological Survey, four sheets, showing country round Manchester.
34. Dr. Yeats's Charts. Three.
35. Seven Maps illustrating Physical Geography. Artaria, Vienna. 1881.
36. Six Maps illustrating Mathematical Geography. Artaria, Vienna. 1881.
37. Five Sheets of French Communal Map, Environs of Paris.
38. Selected Views of Places, published by Philips.
39. Hölzel's Geographische Bildertafeln (a set).
40. Hölzel's Views in Egypt.

MRS. WILLOUGHBY, *Higher Ardwick Girls' School* (*see p.* 333).

Sir,—In connection with the above school the geographical lessons for the next year's examination consist of (1) a weekly lesson, in lecture form, on historical geography of England, given on Monday mornings from 11 a.m. until 12. The pupils will take notes and make sketch maps. (2) An hour devoted to map drawing on Thursday, from 11 to 12 a.m. (3) Two reading lessons from Hughes's "Physical Geography" in the course of the week. Oswald's "Historical and Geographical Textbook" is used for memory exercise. In the younger classes Blackie's "Geographical Readers" are used, with one weekly lesson in general geography, assisted by wall maps. No atlases are used by any of the pupils; diagrams from Wettstein's School Atlas, on blackboard, are used for lecture lessons. Since the last report sent to the Geographical Society model maps have been successfully attempted during two successive years in the first class—Lancashire and Africa being the subjects. Unfortunately it has not been found possible to give sufficient time for the lessons in geography to allow modelling to be continued, owing to the larger amount of time bestowed on subjects more peculiarly suitable to female education.

A prize for geography is offered in the different classes, and for geography as a special subject, which is awarded to the possessor of the highest number of marks given for map drawing and the paper on geography which forms part of the yearly examination. Geography is also one of the subjects whose marks are counted for the English prize.

Mr. A. PARK, J.P., F.R.G.S., *Head Master of The Albion Schools, Ashton-under-Lyne.*

5th December, 1890.

Dear Sir,—Since I had the pleasure of submitting my replies to the questions you sent me in 1885, bearing on the subject of geographical education, I am conscious that we here have made very material advances in the way of improvement.

This improvement is evidenced both in the quality and character of the apparatus and class-books employed, and in the methods adopted by the teachers to impart instruction in the subject.

Let me briefly refer to these in the following paragraphs :—

1. Better maps are employed, and more time is devoted to cartography. Evening lectures are given to the pupils, with the aid of the magic lantern. Books of travel, tourists' accounts of places visited, and the most attractive geographical readers are placed in the hands of the elder scholars.

2. The teachers are careful to make physical geography the basis and groundwork of their courses, and to avoid *mechanical* forms as much as possible. In the senior classes attention is given to *comparative* civilisation, the industries of the human family, and the intercourse between nation and nation on commercial principles.

Let me further add that prizes are offered for proficiency in the subject, and to the evening meetings where the magic lantern is used the parents and friends are invited.

Mr. H. YULE OLDHAM, *Hon. Sec. the Working Men's Clubs Association (see p.* 335).

Working Men's Clubs Association, Oxford Chambers, Oxford Street,
Manchester, June 18, 1890.

Dear Mr. Sowerbutts,—What we do for spreading geographical knowledge is practically the same now as in 1885.

Last winter over 100 lectures were given by our lecturers, of which, as you will see by the enclosed report, a fair number were on geographical subjects. These have proved to be well appreciated and very attractive, especially when illustrated by magic-lantern slides, for the use of which we have been frequently indebted to your kindness.

Mr. W. W. CROMPTON, *Hon. Secretary Bury Athenæum (see p.* 336).

The Athenæum, Bury, May 26, 1890.

Dear Sir,—In reply to your letter of the 21st inst., I beg to inform you that we have no class for the teaching of geography at present.

The Rev. E. HALE, M.A., F.R.G.S., *Assistant Master at Eton (see p.* 338).

Jordley's Place, Eton College, May 31, 1890.

Dear Sir,—I am much honoured by the Council of the Manchester Geographical Society reprinting what I read before the British Association about geographical teaching. I am a science master here, and we still teach all our boys for one year (two lessons weekly) physiography, or, in old-fashioned terms, physical geography. I have seen no reason to alter my opinion of the great value of that science in an educational point of view—it rouses boys' powers of observation, and leads them to trace cause and effect.

I lament the divorce between history and political geography in schools. They are properly inseparable, and one cannot efficiently be studied apart from the other. But as long as teachers are absolutely ignorant of geography of any kind, but little improvement can be expected.

I trust your Council will examine the papers set in the various examinations conducted by the Civil Service Commissioners. If in the army and such like examinations the papers required a more scientific study of geography, no doubt the school teachers would rise to the demand. At present the knowledge shown by the examinee is very illusive.

THE REV. MORLEY STEVENSON, *Principal of the Training College, Warrington.*

Warrington Training College, May 23, 1890.

Dear Sir,—I reply to your questions I beg to state—

1. Geography is taught in this College as a separate subject, the extent being ruled by the Education Department Syllabus for Female Training Colleges. It may be said to comprise a general knowledge of the physical, political, and commercial geography of the world, with certain countries in greater detail, *e.g.*, the British Empire. The time per week devoted to the subject is for one class 2¾ hours, and for the other 3¾ hours. The knowledge of physical geography is for most of our students largely increased by the fact that 92 students out of 100 are taught physiography (South Kensington Syllabus). To this subject four hours per week are given.

2. Two annual prizes, value £1 each, are given to the student in each class who obtains the highest number of marks for geography during the year. Prizes are given in the same way for physiography. Five prizes are offered by the Royal Geographical Society to the five students in Female Training Colleges who gain the highest number of marks for the second year geography examination paper set in December of each year. A student from this College (Miss Isabella Innes) gained one of these prizes, Christmas, 1887.

3. Methods. The students are taught, and are prepared to teach, the subject by—
   - (*a*) Lectures, practice in map drawing, monthly examinations, model lessons to children given by the lecturer on geography, and the criticism of lessons given by the students to children in elementary schools. The students are required to illustrate as fully as possible by means of maps, sketch maps drawn during the lesson, clay models, pictures, specimens of productions, &c.
   - (*b*) Appliances. Maps either printed or drawn on the blackboard, charts, diagrams, globes, tellurion, pictures, specimens of various raw materials and manufactures, and all necessary apparatus for physical geography, *e.g.*, barometer, thermometers, rain-gauge, &c.
   - (*c*) Textbooks. Hughes's Manual of Geography, price 7s. 6d.; Geikie's Physical Geography, Hewitt's Colonies, Longman's New Atlas, 12s. 6d.; Philip's Atlas of the British Empire, and Textbooks for Physiography.
   - (*d*) Reference Books. The Training College Reference Library contains most of the best modern works on the subject. Both teachers and students have access to the library.

4. The special hindrances which we note are, no doubt, peculiar to us. They are—
   - (*a*) That geography is not scientifically and systematically taught in schools, hence the students come to us ill-prepared.
   - (*b*) That the textbooks used by children and pupil-teachers are in many cases small "cram-books."
   - (*c*) That the subject is treated as if unconnected with every day life,

5. Two of the College staff give lectures in physiography and geography.

In addition, the students had the great privilege in the Lent Term of a course of lectures on physical geography, given in the College by H. J. Mackinder, Esq., reader in geography in the University of Oxford.

MR. F. D. KING, *Head Master of the Holy Trinity Schools, Bradford, Yorkshire.*

Holy Trinity Schools, Bradford, Yorkshire, June 11, 1890.

Dear Sir,—In reply to your questions respecting the teaching of geography, I would say—

1. It is taught as a separate subject to the boys in these schools—three hours per week.

2. No prizes are awarded for proficiency in geography.

3. As to methods and appliances, we have wall maps of the school, of Bradford and district, of Yorkshire, of England, of the British Isles, of Europe, and of the World in hemispheres. In addition to this we have a set of Varty's coloured prints to illustrate geographical terms. A geographical reader is used in each class, but rather as a reading book than as a geographical textbook for the children. The teaching is almost entirely oral, the blackboard being used. Maps are drawn by the children in all standards. No textbooks are supplied either to teachers or children.

4. The special hindrances to the thorough and scientific teaching of the subject are—

(1) The want of good relief or contour maps.
(2) The want of more interesting textbooks.
(3) The want of good libraries of geographical works of all kinds, and accessible to teachers at a very cheap rate.
(4) The want of good lectures, with lantern-slide illustrations, to describe in a graphic manner the physical features, the climate, the productions, and the races which inhabit a country.

The average map tells us next to nothing of the contour of a country, and the average textbook is as dry as an auctioneer's catalogue. Descriptive geography is a lost art, and the need for a philosophic explanation of the facts with which most textbooks are crammed seldom appears to have occurred to the writers of them.

MR. J. SCOTT KELTIE, F.R.G.S., *Librarian to the Royal Geographical Society, and Editor of "The Statesman's Year Book," &c., &c.*

1, Savile Row, Burlington Gardens, W., 4th December, 1890.

Dear Mr. Sowerbutts,—I do not think I can add anything to your interesting upplementary report on geographical education. It is satisfactory to see that in your district the subject, especially in its practical aspects, is making progress. It is specially gratifying to notice the comprehensive lines on which it is being worked out in Owens College.

I believe I am right in saying that the Council of the Royal Geographical Society are well satisfied with the results of their efforts so far. There are now classes of geography at Oxford and Cambridge; and there is reason to believe that the annual award of prizes by the Society to training college students is doing good. Judging from the examination papers, geography is taught in the training colleges on very satisfactory lines.

Except in the most advanced stages, I am of opinion that the practical application of geography—to commerce, to colonisation, to history—can best be indicated in connection with the teaching of the general subject; especially so in elementary schools. On this and other matters you will find what I have to say in the little book on "Applied Geography," a copy of which I send you.

MR. H. J. MACKINDER, M.A., *Reader in Geography to the University of Oxford.*

1, Bradmore Road, Oxford, 27th December, 1890.

Dear Mr. Sowerbutts,— In reply to your letter of December 3rd I have to say that I have looked through the report of your education committee with very great interest. It seems to me that you are making real progress in Lancashire. I am especially struck with Mr. Cardwell's syllabus of the teaching at St. Bede's College. As Dr. Casartelli says, it is a noteworthy piece of work. Mr. Cardwell is indeed a fortunate man in being able to go through a consistent course of six years' duration. I am persuaded that the greatest of all the defects in the teaching of geography in most of our schools is its disconnected character. Geography is entrusted to the form master, and the boys are moved up as a result of their work in other subjects. The consequence is that I have known of cases where a boy's career through a school has chanced to give him teaching on the geography of South America in three several years, while he has not even once had a lesson on Asia. Hence a "scrappy" instead of a broad and consistent knowledge. The method of contrasts which abounds in Mr. Cardwell's syllabus is impracticable with the ordinary lack of system, which makes it impossible for the teacher to postulate the same, or indeed any previous knowledge on the part of his pupils.

[NOTE.—The work of Mr. J. H. Silberbach, in the preparation of boxes illustrating the natural products, and the boxes illustrating the technical uses of the products, with the geographical text-books, marks a great advance in the method of teaching, and gives the teacher a great fund of matter with which he may interest and teach his pupils. The new books of Dr. Yeats, "The Golden Gates of Trade" and "Map Studies," Dr. Mills's "Commercial Geography and Atlas," Mr. J. S. Keltie's "Appliances in Geography," and a number of other works of a similar character, give to the intelligent teacher new text-books of great value.]

PRIZES AND CERTIFICATES FOR 1891 EXAMINATION.

The Council has the pleasure to offer for 1891 the following prizes for proficiency in a geographical examination, and one of the members has very kindly offered a prize for the best essay on one of the most interesting parts of Commercial Geography.

It rests with the members of the Society to make these examinations a success, and to enable the Council to enlarge the field of operations in another year.

The subject for examination for prizes and certificates of the Manchester Geographical Society for next year will be "The Geography of Lancashire and Cheshire."

The following syllabus will be of use as a guide to the children who are intending to present themselves for examination.

The examination will take place in the month of May, 1891, at places to be subsequently appointed by the Council. The children in any school up to the 7th Standard inclusive in Lancashire, Yorkshire, and Cheshire may compete.

The examination will be in writing.

The questions to be answered will be given out to the children by the examiners, who will be present the whole time of the examination.

No notes, text-books, or other aids may be used at the examination.

The papers will be adjudicated upon by two members of the Council of the Society.

Five prizes of £1 each, and ten prizes of 10s. each, will be given with the certificates of the Society.

Any further information may be obtained on application to the Secretary, 44 Brown Street, Manchester.

SYLLABUS.

I.—THE LAND, WATER, AND AIR OF THE TWO COUNTIES.

(*a*) Their position, surface, size, shape, boundaries.

(*b*) Their highlands, middle-lands, and lowlands; their hills and valleys; their islands.

(*c*) Their seas and lakes, and the rivers running into and out of them; the courses and basins of the rivers; their mouths and estuaries.

(*d*) Our climate; our east, west, south, south-west winds; our rainfall, mists, and fogs.

II.—THE NATURAL RICHES OF THE TWO COUNTIES.

(*a*) Mineral wealth; some notions of the geology of the counties; their mines, quarries, springs, coal, iron, salt.

(*b*) Agricultural wealth; food products; farming; medicinal products; industrial products.

(*c*) Animal wealth; our animals; animal substances; our birds; our insects; bee-farming.

III.—THE PEOPLE OF THE TWO COUNTIES.

(*a*) The races of the people; their origin; their dialects.

(*b*) The homes of the people; towns, villages.

(*c*) Their political divisions; counties, hundreds, parliamentary divisions.

(*d*) Their government; What is a "county palatine?" county councils, corporations, poor law, police, and other authorities.

IV.—THE TRADE OF THE TWO COUNTIES.

(*a*) Industries, or the producing of commodities.

(*b*) Commerce, or the exchange of commodities.

A competent knowledge of Section I., and of at least two of the other sections, will be required from all candidates for a prize.

THE GREGORY PRIZE OF FIVE POUNDS.

Mr. Theodore Gregory, F.C.A., offers a Prize of £5 for the best paper written by any member of the Society "On the Commercial Products of Central Africa (the country lying between the Sahara and the Zambesi), and the Best Method of Developing a Trade in them with Europe."

The essays must be sent to the Secretary not later than May 31st, 1891, and each essay must be marked by a *nom de plume*. An envelope must accompany the essay containing the name of the writer within. The envelope must be closed, having the *nom de plume* outside.

The examiners for the Society's prizes for 1891 will award the prize to the writer of the essay which they decide is the best, which will, at the discretion of the editor, be printed in whole or in part in the Society's Journal.

The Committee have pleasure in saying that a perusal of the above replies, compared with those given by the same educational institutions in 1885, will give a very good idea of the amount and kind of progress in geographical teaching made during the space of five years. The net result indicated is, at least, a decided stirring up of general interest in the subject, and some no less decided steps in advance in the direction of the organising of sound geographical training. The influence of our Geographical Exhibition in the one matter of cartography is also indicated, particularly in the list of maps given by the Head Master of the Hulme Grammar School.

Two other events ought to be recorded here as supplementing the information contained in the foregoing returns.

The first is the appointment of a Lecturer on Commercial Geography for the evening classes at the Owens College, in the person of Mr. H. Spencer Wilkinson, M.A., who enjoys a well-merited reputation as an expert and critic on the important subject of Military Cartography. The course of lectures begins with the year 1891.

The second event is the action of the Manchester Chamber of Commerce in introducing General and Commercial Geography into its scheme for Certificates in Commercial Knowledge. The following extracts from the syllabus will indicate the ground covered by the requirements of the Chamber :—

I.

CERTIFICATE FOR JUNIORS.—Intended, in the first place, for boys of 13 to 15, who are leaving school (but not restricted to these), and also to be open to those who will afterwards proceed to the second certificate.

Among the obligatory subjects are :—

Geography: (1) General Notions of Physical Geography, including the origin of mountains and rivers, the causes of day and night, the seasons, &c.

(2) Physical and Political Geography of Europe, with special knowledge of products and industries.

(3) Projecting and Sketching of Maps from Memory.

II.

CERTIFICATE FOR SENIORS.—Intended for boys about 16, but open to all ages.

In Part I. among the obligatory subjects are :—

Geography: (1) General Notions of Physical Geography and Physiography.

(2) Physical and Political Geography of Europe, including a knowledge of the industries and products of various countries.

(3) Projecting and Sketching Maps from Memory.

(4) Special Knowledge of the Geography of India; and of one British colony, and one foreign country, to be named by the Board from year to year.

[Appointed for 1891: British colony, Newfoundland; foreign country, Greece.]

In Part II. ("Technical") which may be taken at the same time as Part I., or, at the candidate's option, six months later :—

Commercial Geography: Some one branch of trade to be appointed each year.

[Appointed for 1891: History and Statistics of the Trade in Raw Cotton.]

APPENDIX.

NEW APPLIANCES AND BOOKS ON COMMERCIAL GEOGRAPHY.

The geographical boxes containing specimens of the natural products of each country of the earth, with text-books arranged by Mr. J. H. Silberbach, for the use of the Diocesan Schools of the Wirral peninsula, are most effective in the hands of capable teachers.

We are glad to have heard of a number of schools, besides those mentioned in the report, which are accumulating geographical museums, many of them of a humble sort, yet indicating that the movement inaugurated by this Society, for the more graphic and less bookish method of teaching, is making progress.

We are also glad to learn that many schools are becoming possessed of lanterns, which are used to illustrate geographical teaching.

The Society's lantern has, we are pleased to note, been used during the winter once or twice every week, with graphic and interesting lectures by the Victorians.

The following list of new books in English, on Commercial Geography, will be useful to teachers and school managers :—

Chisholm's Commercial Geography. Longmans. 16s.

Notes on Commercial Geography. By Rev. L. C. Casartelli, M.A. J. B. Ledsham. 1s. 6d.

Cardwell's Introduction to Commercial Geography, Map Drawing, and Projection from Memory. By Mr. J. J. Cardwell. John Heywood.

Elementary Commercial Geography. By Mr. H. R. Mill, D.Sc., &c. (Pitt Press Series.) C. J. Clay & Son. 1s. 6d.

Atlas of Commercial Geography. By J. G. Bartholomew. (Pitt Press Series.) 27 Maps and Introduction. C. J. Clay & Son. 3s.

Commercial Geography. By Dr. Carl Zehden. Translated by F. Muirhead, M.A. Map. Blackie & Son. 7s. 6d.

Applied Geography. By Mr. J. Scott Keltie. Maps. G. Philip & Son.

Commercial Geography. By Mr. Kenric Murray, of London Chamber of Commerce.

Year Book of Commerce. By Mr. K. Murray. 1890-91. Cassell & Co.

Statistical Year Book. 1891. Edited by Mr. J. Scott Keltie. Cassell & Co.

Whitaker's Almanack. 1891. 2s. 6d.

Growth and Vicissitude of Commerce; Recent and Existing Commerce; Technical History of Commerce; and Natural History of Commerce. These four standard books, by Dr. J. Yeats, LL.D., are published at 6s. each; but the set is supplied by the publishers at a reduction, and have maps and diagrams. G. Philip & Son.

The Golden Gates of Trade. Map Studies of the Mercantile World. By Dr. Yeats. G. Philip & Son. 2s. 6d. each.

Natural Products of Africa. (Text-book to geographical box of Africa.) By J. H. Silberbach. 4d.

The Earth and Man: A Study in Advanced Geography. (Lecture by Dr. R. Mill.) Notes of which are not yet published.

PROCEEDINGS OF THE SOCIETY

FROM JULY 1ST TO SEPTEMBER 30TH, 1890.

HUNDRED AND THIRTY-FOURTH MEETING

Of the Society, held in the Imperial Hotel, Huddersfield, on Saturday, July 19, 1890, at 7-30 p.m., Mr. J. OWEN STOCK in the chair.

The members had gone by rail to Stocksmoor, and walked by Grange, the Storrs Woods, Farnley Tyas, and Castle Hill to Huddersfield. The walk was very enjoyable, the woods were delightful, and the extensive views in the clear atmosphere very striking. The geology and botany, &c., of the district were referred to during the walk, and the old town of Almondbury, with the Roman and Saxon camp on Castle Hill, brought out the archæological feature of the excursion.

After a good tea some of the members returned to the Technical School to make a further examination of the building and apparatus of the school.

Votes of thanks were heartily given to Mr. Smith, the leader of the party, Mr. Stock, and Mr. A. Keene, of the Technical School.

HUNDRED AND THIRTY-FIFTH MEETING

Of the Society, held in the Library, Tuesday, July 22, 1890, at 7-30 p.m. Mr. C. H. STOTT in the chair.

The minutes of meetings from the 115th to 134th having been read and approved, the election of the following members was announced:—

ORDINARY: Mrs. E. Morgan, Miss H. Staveacre, and Messrs. R. J. Bedell, H. H. Bolton, L. Brettauer, James Burgess, J. F. Cheetham, J.P., W. S. Churchill, J. Clarke, Thomas Costley, Dr. Cox, W. H. Eastwood, John Farish, Fred Gleun, J.P., B. Glossop, E. F. Goulburn, John Hardman, George Hargreaves, J. P. Hartley, Richard Healey, Thomas Ivison, Jones, Benjamin Kenyon, John Killock, Matthew Killock. T. H. Lees, W. Leigh, John McRobert, Alex. Neil, W. H. Rowbotham, A. C. Russell, Alfred T. M. W. Thompstone, D. W. Vaughan, M.A., J. J. Warbrick, Daniel Williams, W. H. Withington, R. B. Wood, and Councillor W. Wood.

ASSOCIATE: Messrs. Thomas Bleakley, E. Harrison, Henry Huppold, E. Leeman, and P. Spencer.

CORRESPONDING: Mr. Alvan Millson, of Lagos.

A large number of presentations were announced, and letters were read from H.E. Sir A. Moloney, K.C.M.G., Lagos, C. Tondini de Quarenghi, R. E. Dennett, of the Congo, and others.

The following papers were then read: "The Historical Development of the Geographical Delineation of the Great African Lakes," by J. Howard Reed (see p. 208); "The Island of Kadavu," by J. P. Thomson, F.R.S.G.S. (see p. 194); "The Rhins of Galloway," by W. G. Black, F.R.C.S.E., &c., &c. (see p. 206); "The Great Pyramid."

The Anglo-German Agreement was discussed, and maps referred to. The arrangements for the excursion to Sweden were announced.

The meeting closed with votes of thanks to the writers and readers of the papers, and to the chairman.

To Illust

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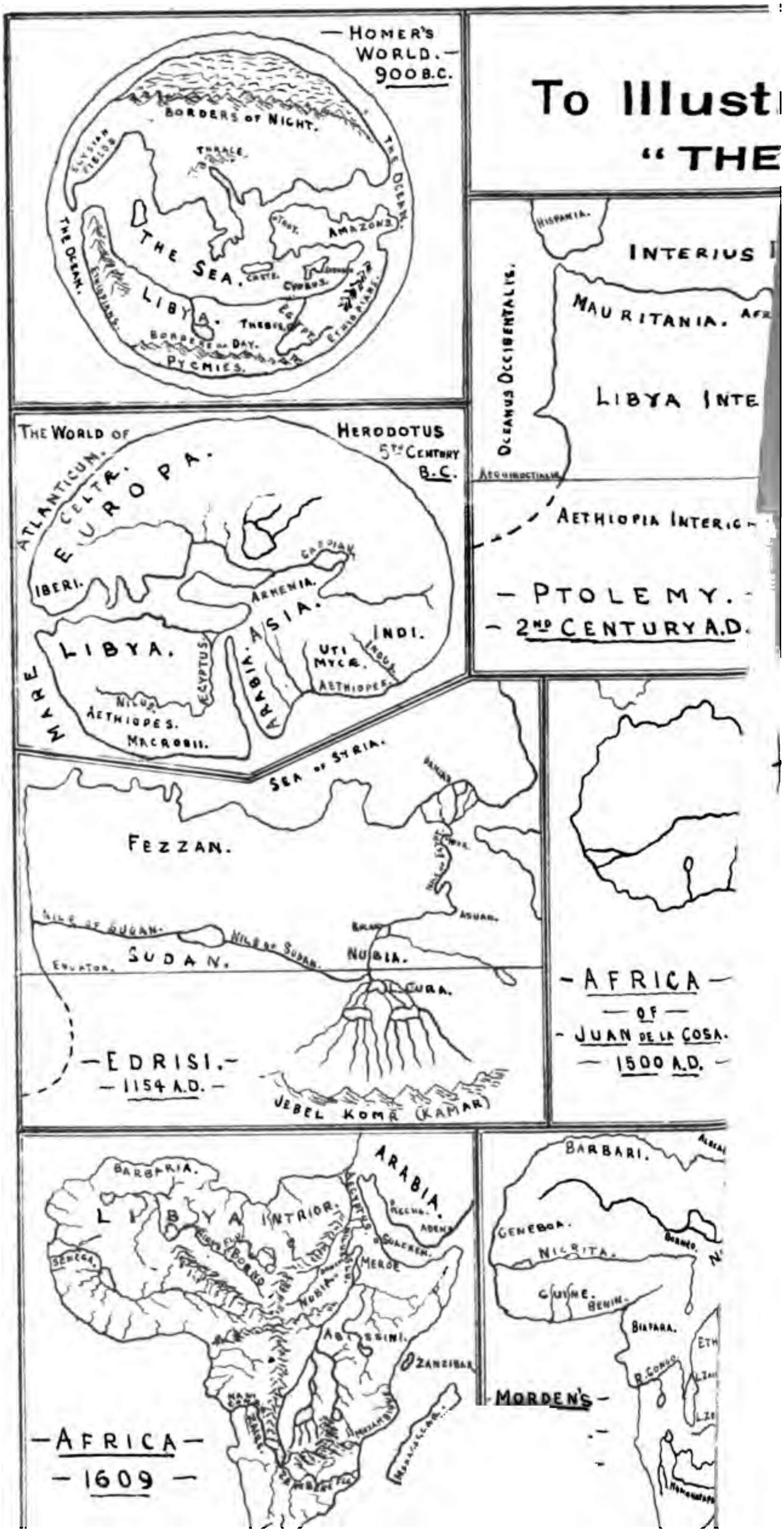

THE JOURNAL

OF THE

ANCHESTER GEOGRAPHICAL SOCIETY.

THE NILE: HISTORICAL AND GEOGRAPHICAL.

(*See Maps.*)*

By MR. J. HOWARD REED.

[Addressed to the Members in the Library, Wednesday, Oct. 8th, 1890. Mr. W. ALDRED, F.C.A., in the chair.]

I INVITE you this evening to accompany me on an imaginary visit to a distant land. I propose to journey to the land of the Pharaohs, push ahead through Nubia into Ethiopia, and visit the great equatorial lakes of Central Africa.

Our object will be to learn all we can of the "holy river" Nile, to follow its windings, and visit its most remote fountains or sources.

The story the Nile has to tell us is, I venture to say, one of a most interesting character. I feel sure the pleasure of our imaginary journey to-night will be marred only by the indifferent capacity of the guide. Our business will be to study the history, and more especially the geography, of the Nile.

The holy river—"the Jove-descended Nile"—formerly bore the name of *Ægyptus.* Professor Rawlinson, in his "History of the Ancient Egyptians," says: "the term Egypt was not known to the Ancient Egyptians themselves, but appears to have been first used by the Greeks as a name for the Nile, and thence extended to the country. It is stated by some authorities that the river received its present title from Nilus, an ancient king of Thebes, who named the stream after himself.

"Father Nile" was an object of great veneration to the ancients, and a gift of its waters was considered by them as a present fit for kings and queens. The veneration in which the river was held, of course, arose from the blessings its annual overflow spread broadcast over its banks, by fertilising the seed of the sower, producing abundant crops for the sickle of the reaper, and thus making glad the heart of man. It is stated that the Arabs in the present day consider it a delicious privilege to slake their thirst with the salubrious and

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* The maps accompanying this paper are reduced from the diagrams exhibited by Mr. Reed at the meeting.

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agreeable waters of the river, and I have read that they will even artificially excite thirst to indulge in the pleasure of imbibing refreshing and satisfying draughts from the "holy stream." The general Pescennius Niger is said to have cried to his soldiers: "What! Crave you for wine, when you have the water of the Nile to drink?" Homer is stated to have said, no doubt referring poetically to its regular and fertilising overflow: "The Nile flows down from heaven." The Egyptians say that "if Mahomet had tasted the waters of the Nile, he would have prayed God to make him immortal, that he might have enjoyed them for ever."

The river has a total length of considerably over 3,000 miles, and is remarkable, among the rivers of the world, from the fact that for about the last 1,500 miles of its flow it receives no tributary—none, in fact, after the Atbara or Tacazze. The consequence is that, by the time it reaches the sea, its volume is considerably reduced by evaporation, and from the large quantity of water used along its banks for irrigation and other purposes. The river is formed of two principal branches, the Bahr-el-Azrek or Blue Nile, and the Bahr-el-Abiad or White Nile, the latter of which is the main branch or true Nile. It receives also, as tributary rivers, the Atbara or Tacazze before mentioned, with the Sobat and Asua on the east side; and the Bahr-el-Gazelle on the west; besides other smaller and less-important streams. Its waters are discharged into the Mediterranean through several mouths, the two principal of which are known as the Rosetta and Damietta mouths—the first-named being to the west and the other to the east. The principal island, formed by the divisions of the river, being shaped like the fourth letter of the Greek alphabet, takes the name of Delta; and the Nile is doubtless the river which first suggested, what is now a technical name for all similar formations at the mouths of rivers.

The rise and overflow of the Nile, caused by the seasonal rains of the interior, has been for ages noted for its regularity. The rise commences about midsummer, reaches its greatest height at the autumnal equinox, and has again subsided by Christmas; leaving the land highly enriched by the fertilising sediment of red earth brought down by the Abyssinian tributaries, and deposited by the river. The land can then be worked, and the crops planted.

The rise and fall of the river is watched with great anxiety by the inhabitants of the Nile valley. At intervals along its banks river gauges, or nilometers, are fixed, upon which the variations of the river are duly recorded. I believe some nilometers are still in existence and use, which have done service for untold generations.

It was no doubt the rise, overflow, and fall of the river that first attracted the attention of thoughtful men in ancient days, and excited the curiosity which led them to inquire into its cause.

Nearly five centuries before the Christian era, the first great African traveller, Herodotus, writing about the Nile, said: "Respecting the nature of this river, I was unable to gain any information, either from the priests or anyone else. I was very desirous, however, of learning from them why the Nile, beginning at the summer solstice, fills and overflows for a hundred days; and when it has nearly completed this number of days, falls short in its stream and retires; so that it continues low all the winter, until the return of the summer solstice . . . by saying that the Nile flows from melted snow, it says nothing, for this river flows from Libya through the middle of Ethiopia, and discharges itself into Egypt; how, therefore, since it runs from a very hot to a colder region, can it flow from snow?" And again he says: "Touching the source of the Nile, no man of all the Egyptians, Lybians, or Grecians I have conversed with ever pretended to know anything certain, except a scribe, who had the charge of Minerva's treasury at Sais, a city of Egypt. And though I thought he trifled with me, when he said he was perfectly informed of this secret, I shall yet give a place here to his relation: 'Crophi,' said he, 'and Mophi, are two mountains with heads of pyramidical form, . . . and between these hills is a profound abyss, which contains the springs of the Nile. One half of the water issuing from this place runs into Egypt northward; the other half passes southward to Ethiopia!'"

We have before us a map of the world, as known in the time of Herodotus, which shows the river flowing from the west as he supposed it to do. You will note that in the map of the world of the Homeric epoch, 900 B.C., the Nile is shown flowing from the east.

Alexander the Great and Ptolemy Philadelphus are stated to have earnestly contemplated the solution of the Nile problem; and the Latin poet, Lucan, in representing Julius Cæsar as speaking at the feast of Cleopatra, ascribes to him the same desire:—

"Yet still no views have urged my ardour more
Than Nile's remotest mountains to explore.
Then say what source the famous stream supplies,
And bids it at revolving periods rise;
Show me the head from which, since time begun,
The long succession of his waves have run;
This let me know, and all my toils shall cease,
The sword be sheathed, and earth be blessed with peace."

Seneca writes that the Emperor Nero sent an exploring expedition, under two centurions, with military force, to explore the countries along the banks of the Astapus or White River, and to search for the Nile's sources. They passed down the river a considerable distance until immense marshes were met with. They forced their way through, and continued their journey southward, until the river was seen "tumbling down or issuing out between the rocks." They were then obliged to turn back and declare their mission a failure. The centurions are stated to have brought back with them a map of the districts they had passed through, for the information of the Imperial Nero.

This early expedition succeeded in penetrating about 800 Roman miles south of Meroe—that is to say, reaching 3° or 4° north latitude. The place where the water was seen "tumbling down from between the rocks" was probably the Fola or Mekade cataract, again discovered in our own day by the late General Gordon. The river here rushes through a narrow ravine, over and between rocks of from 30 to 40 feet high. These falls are stated to be the only insurmountable obstacle to the navigation of the Nile, for vessels of considerable size, from the Mediterranean to the Albert Lake.

About seventy years later, during the second century, we find Claudius Ptolemy, a celebrated geographer and astrologer of Alexandria, writing about the Nile and its sources. He tells us that the "holy stream" rises some twelve degrees south of the equator, in a number of streams that flow into two lakes, situated east and west of each other; from which, in turn, issue two rivers; these afterwards unite and form the Nile. From latitudes and longtitudes given by the ancient writer, various geographers have at different times produced maps showing the supposed position of Ptolemy's lakes. His positions are not very reliable, being based upon the imperfect knowledge of his day; but they can, to some extent, be interpreted when altered to suit the known positions of other geographical points, which he also incorrectly fixed by the rude means and crude information at his command. I have copied the main features of one of these maps.

Ptolemy also mentioned that in the interior of Africa were some mountains which he called "Selenes Oros"—generally translated "Mountains of the Moon." This statement of Ptolemy's would almost seem to be a development, or advance, upon what Herodotus refers to—viz., that the Nile was stated to be fed by melting snow—which suggests the probable existence of snow caps to Ptolemy's "Moon Mountains."

Following in the steps of Ptolemy come the Arab geographers, and they are stated to have practically adopted all his theories and geographical notions. Among the Arab writers we find that Edrisi, in the year 1154, writing of the Nile, says: "These two parts of the Nile spring from the Mountains of the Moon, which are situated 16° beyond the equator. From these mountains the Nile issues in ten streams, five of which flow together into one great lake, and the remainder into another such lake. From each of these lakes flow three rivers, the whole of which, by their conflux, form a very large lake. . . . The Nile (of Egypt) . . . flows to the northward, watering in its course the countries of Nubia and Egypt." Edrisi's map, it will be noticed, is much the same as that of Ptolemy, although of about a thousand years' later date.

Abulfeda, who lived between the years 1273 and 1331, writing of the Nile, says: "It springs from those deserts which extend southward beyond the equator; wherefore it is difficult for us to investigate its sources. . . . The Greeks . . . relate that Ptolemy informs them that they flow from the mountains Al Komri (the Mountains of the Moon) in ten distinct streams. . . . These ten streams run into two lakes; five into each. . . . From each of these lakes spring four rivers, or eight in all: . . . six run northward, and form a round lake at the equator. . . . The Nile emerging from this lake . . . passes on to Misrain (Cairo)."

Scheadeddin says: "From the Mountains of the Moon the Egyptian Nile takes its rise. . . . Many rivers come from this mountain, and unite in a great lake. From this lake comes the Nile, the greatest and most beautiful of the rivers of all the earth."

Later on we find that the Portuguese travellers obtained a considerable amount of information regarding the geography of the interior of Africa. They appear to have had some knowledge of the existence of several large lakes in the centre of the continent, and in some of their early maps these lakes find a place. I have been able to produce roughly, from a very small sketch which I possess, a copy of a map of

Africa which belonged to Juan de la Cosa, the pilot of Columbus. The Mountains of the Moon do not appear in this map, but you will note that the Nile is shown flowing from lakes in the interior.

Many of the old maps of Africa, dating from the 16th and 17th centuries—two others of which I have copied—show the Nile flowing from lakes in various positions, and most of them are embellished with sketches of "Lunæ Montes"—Moon Mountains—running in ranges across the continent in every conceivable direction, north, south, east, and west. The sketches on many of the maps remind one of Swift's verse, written in 1733:—

> "So geographers in Afric maps,
> With savage pictures fill their gaps,
> And o'er unhabitable downs
> Place elephants for want of towns."

The reverend poet had no doubt seen some of the maps—still to be seen—which have sketches of elephants, ostriches, &c., sprawled over the districts, which in more modern, but perhaps less artistic, days we should leave blank.

Pigafetta, a Portuguese traveller and voyager, who lived in the 16th century, writing in 1591, mentioned the existence of lakes in the centre of Africa. He stated that there were two lakes, not lying east and west as supposed by Ptolemy, but north and south, about 400 miles apart, which gave birth to the Nile. These lakes are supposed to refer to the Nyasa and Tanganyika, by Captain Burton, who states that from then, till the time when they were visited by Livingstone and himself, "they were blended into one lake, or separated into two to suit the varying theories of the geographer." The Nyasa was known by repute under the name of Maravi, and was so marked on the maps of Africa used by our fathers.

Another feature of the maps of the first half of this century is the range of mountains running across the continent from east to west, and known by the old title of "Mountains of the Moon." The Kong Mountains were known from the reports of travellers in the west, and were fancifully extended across the continent in the neighbourhood of the equator by the map makers; possibly on account of Ptolemy's original statement, but more probably because they already existed in the earlier maps of the Portuguese and others.

It is interesting to note, as it has a direct bearing on the probable reason for the placing of the "Mountains of the Moon," that the now well-known country of Unyamwezi, has been more or less known for several centuries. Burton says it was first heard of by the Portuguese about 1589, and was supposed to cover a very large area in Central Africa. Its name, Unyamwezi, has been translated at different times as "Country of the Moon," and this, no doubt, had something to do with Ptolemy's mountains of the same name being fixed on the maps in its locality. However this may be, the fact remains that the Mountains of the Moon and the lakes of Africa have shifted about, disappeared and reappeared, in every conceivable manner, for centuries; till, so late as the middle of the present century, we find them fixed as in the map now before us, which I have copied from an atlas bearing date 1849.

I must now ask you to let me take you back a short time, while we trace the development of knowledge further to the north. It appears to have been known to the ancients that the Nile proper is formed of two principal branches, which join and form one river close to where the town of Khartoum (or its ruin) now stands; but beyond this, as we have seen, little authentic information has been handed down.

In the year 1770, Bruce gave his attention to the Blue Nile. He was enabled to locate the sources of that branch of the river among the mountains and highlands of Abyssinia, near Lake Dembea. In 1788 the African Association was founded, and in furtherance of its objects much information was obtained of the geography of the "Dark Continent." In 1827, M. Linant, a French traveller, passed up the White Nile to a considerable distance above its junction with the Blue Nile branch. About the year 1840 two Egyptian naval officers headed an expedition, fitted out by Mahommed Ali, the then ruler of Egypt; they forced their way through the terrible marshes to within 3° 40″ of the equator; but were, like the expedition of the Emperor Nero, at last obliged to turn back.

In 1831 the old African Association was merged into the Royal Geographical Society, and from then, right down to the present time, our knowledge of the Nile and its sources has been perfecting itself. Many times during this period have theories been promulgated, based upon imperfect, incorrect, or insufficient information, which, in time, have been abandoned when viewed in the light of new facts, obtained only by numerous and gallant efforts put forth by many heroic and energetic men. Some of these brave hearts have done much, and earned for themselves an everlasting name on the scroll of Nile heroes; some have attempted noble things, but have been cut down by death before they had fairly crossed the threshold; while others have given their time, their money, their health, aye! and ultimately their life, in the search for the sources of the "holy stream," without being permitted to see—even afar off—the fountains they were searching for! With your indulgence we will try to follow the steps of these later travellers a little closer, and endeavour to develop an increasing knowledge of what has been done by them.

In the year 1844, at Mombasa, on the east coast of Africa, a mission station was established under the auspices of the Church Missionary Society. The work at this station was carried on by three gentlemen—Messrs. Krapf, Rebmann, and Erhardt. These reverend pioneers did much to direct the eyes of the geographical world to that part of the globe. They heard, from the trading Arabs and natives, of a large lake, or series of lakes, existing in the interior of the continent, and they discovered the snow-capped mountains Kilimanjaro and Kenia. In 1855 Rebmann and Erhardt sent home to England a rough sketch-map, drawn from the information obtained, indicating the position of the huge lake, or series of large lakes, of which they had heard. The enormous extent of country which this lake, as sketched, was supposed to cover, together with the shape given to it by the missonaries, drew the special attention of the geographical world to the matter. The newly-reported lake, not only occupied a large area at its upper or northern end, but stretched to such a distance to the south, in a long trailing area, that it covered the assumed position of the reputed Sea of Ujiji or Tanganyika Lake, as well as the Maravi or Nyasa Lake, which, as we have before seen, had been reported to exist from the days of Pigafetta.

Speculation immediately became rife, and it was shrewdly suspected by geographers that the lake or lakes formed the "fountains of the Nile." The map and reports of the Mombasa missionaries created such a flutter in geographical circles in England that the Royal Geographical Society gave the subject their attention, and the public press discussed the matter from all points of view.

The result of the Royal Geographical Society's deliberations on the subject was, that they determined to make a practical effort to get further information, and, if possible, to clear up the whole mystery. They arranged that an expedition should be sent into the interior of Central Africa, "for the purpose of ascertaining the limits of the sea of Ujiji, or Unyamwezi Lake."

Captain R. F. Burton (afterwards Sir Richard Burton), a traveller who had already won his spurs in successfully penetrating the interior of difficult and dangerous countries, was invited to lead the expedition. He was accompanied by Lieutenant Speke. These two gentlemen, who both belonged to the Indian army, had been before associated in an expedition which attempted to penetrate the "Dark Continent" from the Somali coast, but which met with disaster, one of its white members losing his life, the others being each wounded, and from which Speke only narrowly escaped with his life, he being covered with no less than eleven spear wounds.

Burton and Speke's expedition started from Zanzibar about the beginning of the year 1857. We shall not be able to follow the details of their journey, but merely refer to its geographical results. They travelled westward, suffering various difficulties and illnesses; but, nevertheless, "strong in will, to strive, to seek, to find, and not to yield."

On the 13th of February, 1858, they were rewarded by their first view of Lake Tanganyika. They were undoubtedly the first Englishmen to sight its waters, and probably the first white men who had gazed upon its blue expanse. They might well have exclaimed with the ancient mariner:—

> "We were the first that ever burst
> Into that silent sea."

After some little difficulty and delay, due in great measure to the serious illness of both the travellers, they were enabled to make a voyage of exploration on the lake in canoes hired from some of the Ujiji Arabs. They had been told by these Arabs of the existence, at the north end of the lake, of an outflowing river, and bearing the name Rusizi. They made a gallant effort to reach this supposed outlet, but failed to get further north than Uvira on the west shore. Here their men quite refused to go further, and Burton being paralytic, and Speke nearly blind at the time, they found themselves compelled to give up the quest. The sons of a native chief visited their camp at Uvira, and they were asked about the mysterious river supposed to issue from the north end of the lake. Burton says: "They all declared that they had visited it, . . . but they unanimously asserted, and every man in the host of bystanders confirmed their words, that the Rusizi enters into, and does not flow out of, the Tanganyika." He says further: "I felt sick at heart. I had not, it is true, undertaken to explore the 'Coy Fountains' by this route; but the combined assertions of the cogging Shaykh and the false Msawahili had startled me from the proprieties of reason, and—this was the result."

Referring to the people's refusal to go further, Burton says: "It is a characteristic of African travel that the explorer may be arrested at the very bourne of his journey, on the very threshold of success, by a single stage, as effectually as if all the waves of the Atlantic or the sands of Arabia lay between."

In May, 1858, Burton and Speke turned their backs upon Tanganyika and June found them back again at Kazé in Unyanyembe. It was here that the travellers, on their journey inland, first got any definite information about the lake regions. An Arab, who became their host in that settlement, Sheikh Snay by name, informed them that the Ukerewe Lake, the Sea of Ujiji, and Lake Nyasa, were three separate lakes, and not one gigantic sheet of water as shown upon the map of the Mombasa missionaries.

On reaching Kazé, on their return journey, Speke resolved to make a flying visit northward in the hope of getting some information, or perhaps even a view, of the reputed Ukerewe Lake. This journey was undertaken with the full consent of Burton, who was himself obliged to stay behind, being in very poor health, and engaged besides in collecting information, from the natives and Arabs, of the peoples and countries they had not been able to visit. On the 9th of July, 1858, Speke started with a small caravan for the north and the Ukerewe Lake, the waters of which first broke into his view on the 30th of the same month. At that moment Speke believed he had discovered the head waters of the Nile. He had already heard from the Arabs that the lake had an enormous area, and had been told tales by them of vessels which were said to sail the waters of a river a long way to the north, which was connected to the lake at his feet. Speke had previously heard a similar story when in the Somali country; he had been told of a sheet of water, as large as the Gulf of Aden, which was navigated by white men, but he, at that time, thought the story referred to the Atlantic Ocean in the far far west. These stories were now confirmed, in some measure, by the natives living in the neighbourhood of the lake. Some of them told him they had never heard of it having any end, while others were able to give him an estimate of its width, and tell him of the tribes and peoples living on its banks.

Speke himself was unable to see very far to the northward, owing to a large island known as Ukerewe by the natives, and which was doubtless the origin of the name by which the Arabs knew the lake. He was able to ascertain, however, that the sheet of water extended far to the northward beyond the island, and felt little doubt in his own mind that the tales he had heard, of the waters being navigated by white men, referred to the expedition of Mahommed Ali, which had reached the neighbourhood of Gondokoro, on the Nile. He believed the river must be joined to the lake at its north end, and that the natives had confused the river to the north with the lake itself in repeating the stories they had heard, and which had almost become legends, about the white men and their ships. The lake was known to the natives by the term Nyanza, to which Speke prefixed the name Victoria, in honour of the queen he delighted to serve.

On rejoining Burton and telling him of his discovery, and his theory connected with it, Speke met with little or no encouragement. Burton could not believe there was any great value attached to Speke's discovery. He would not for a moment admit, that there were any good grounds for believing, that the lake extended to the great distance northward believed by Speke; and refused altogether to countenance the hypothesis of its being a source, or *the* source, of the White Nile. Burton, therefore, in his official map, only shows the small portion of the lake actually seen by his companion, and vigorously opposed Speke's theory on their return home.

On returning to England Speke published articles in the journals of the day, in which he stated his belief that his Victoria Lake would prove to be the source of the White Nile. In his map he showed a range of hills round the north end of Tanganyika, which he believed to be the Mountains of the Moon of the ancients. These mountains thus appear again in a new form and place, but still in the neighbourhood of Unyamwezi, the country of the moon.

Speke proposed to again visit Africa to further investigate the geography of the new-found lake. His view was to penetrate, if possible, the countries to the north of the Victoria Nyanza, and search for an outflowing river; which, if found, he proposed to follow and try to establish its identity.

The Royal Geographical Society entertained Speke's view, and under its auspices a new expedition to Central Africa was set on foot. Speke was appointed leader, and his friend Captain Grant, also of the Indian army, was appointed to assist him.

On April 27th, 1860, Speke and Grant set sail for Zanzibar, and soon after were *en route* for Central Africa. Kazé was reached in January, 1861. Speke was again hospitably entertained by the Arab settlers, and was able to reorganise his expedition previous to penetrating the unknown country lying between him and Karagwe, a country to the west of the Victoria Lake. He was able to get valuable information, from the Arabs, of the countries and peoples it would be his lot to pass through, besides instructive hints on the geography of the land. It is interesting to note that one of the items of information imparted to Speke by the Kazé Arabs on this journey, and recorded in his journal, was the statement that at a great distance to the northward of Karagwe there existed a high mountain, on which "white powder" was said to fall. I beg you to notice this point particularly, as it has a direct bearing upon something we shall have to consider later on.

Karagwe was reached in course of time, and the expedition met with considerable kindness from Rumanika, the king. This sable monarch proved himself to be a perfect African gentleman, which character he still maintained when visited by other white men in later times. Speke here discovered a beautiful little lake, which at the suggestion of Grant he named Lake Windermere, as it reminded Grant of our own Cumberland water. Flowing through this lake a river was discovered which was known to the people as the Kitangule; it was flowing in the direction of the Nyanza, and Speke was assured that it emptied itself into that lake.

On the journey from Karagwe to Uganda, Speke obtained the first view of the great lake during this expedition. The portion seen was at the north-west corner.

Owing to the difficulties met with, the travellers were unable to see very much of the Nyanza while in Uganda; but they were able to get considerable verbal information from Mtesa the king, and from the people. Speke learned that there was a river, which, coming out of the lake, flowed northwards through the country of Unyoro. He also learned of the existence of another large lake to the north west, known as Luta Nzige. In addition to this, he was informed that there was another lake to the east, beyond Usoga, from the neighbourhood of which the Waganda (people of Uganda) obtained salt. It was stated that a river flowed to the northward out of this lake, and joined the river which flowed from Uganda, thus making Usoga an island.

Speke and Grant, having obtained permission from Mtesa to leave Uganda for Unyoro, and a promise to be allowed to visit the outlet from the lake before doing so, made their arrangements, and bid the king good-bye. Grant went on with a portion of the expedition, with a view of travelling to the court of Unyoro by land, while Speke made a journey to the river which flowed from the Victoria. He struck the river at Urondogani, and from there traced it back towards the lake until he reached the place of exit. He found that the river flowed out of the Nyanza over a waterfall about 12 feet high, and from 400 to 500 yards wide. He named this cascade Ripon Falls, in honour of the president of the Royal Geographical Society.

On his journey to the river, Speke had crossed several gulleys, which he calls "rush-drains," and which he shows on his map as minor outlets from the lake, joining the main river a little way to the north. With reference to the reputed lake and river beyond Usoga, Speke believed this to refer to Lake Baringo, which had previously been heard of by the Mombasa missionaries. He therefore shows this lake in his map in dotted lines, joined by a creek to the Nyanza.

After having satisfied himself with regard to the outlet from the Victoria Lake, Speke endeavoured to follow the river through Unyoro. He was, however, not permitted to do this, but was compelled by the suspicion of the Wanyoro (people of Unyoro) to visit the court of King Kamrasi by the land route.

Being detained in Unyoro for some while, Speke made the best use he could of the time by collecting information from the people on the geography of the district. He here received confirmation of the tales he had heard about the other lake (Luta Nzige), in Uganda and elsewhere; with the additional statement that the river which flowed from the Nyanza, through Uganda and Unyoro, fell into the Luta Nzige; from whence it again issued a little further north and continued its northward flow. He and Grant were, however, quite unable to follow up this clue. They had by this time, after three years' wanderings, nearly exhausted all their goods, and were obliged to make for Gondokoro as straight as possible.

News reached the travellers at Kamrasi's that white men were awaiting them in the vicinity of Gani, a district to the northward. They, therefore, pushed on in the hope that it might turn out to be Petherick, an English ivory trader, and his people, with whom an arrangement had been made before starting from Zanzibar, for assistance to be rendered them in this neighbourhood. The camp of the so-called white men was duly reached. They turned out to be an ivory-hunting expedition, consisting of a motley crowd of Turks, Nubians, Egyptians, slaves, &c., under the leadership of one Mahomed, who owned Petherick as master. Petherick himself was not there.

It was not long after this that Speke and Grant reached Gondokoro clad in honourable rags, but bearing the secret of the White Nile in their pockets. On the way they visited the Asua River, which flows from the south-east and enters the main stream of the Nile. This river Speke supposed to flow from the Baringo Lake, and it is so marked in his map.

The travellers were met at Gondokoro by Mr. and Mrs. Baker—afterwards Sir Samuel and Lady Baker—who had fitted out an expedition with the intention of aiding the travellers, if they required help, or of making an attempt to settle the problem themselves, if Speke and Grant had failed. Baker placed his chartered vessels at the disposal of the travel-worn explorers, who were thus enabled shortly afterwards to reach the confines of civilisation. Speke then cabled his now historic message to England: "The Nile is settled."

During the time that Speke and Grant were associated with Sir Samuel and Lady Baker at Gondokoro, they explained to them what they had heard from the natives of the Luta Nzige, and gave them full information of the country lying between Gondokoro and the court of Kamrasi of Unyoro. The result was that Baker determined to push on there, in the hope of being able to discover the lake which the home-coming travellers had been obliged to leave.

Sir Samuel and his heroic wife, therefore, bid good-bye to Speke and Grant and turned their faces southward for Unyoro. The ivory-trading and slave-raiding Turks were very jealous of the English travellers breaking through the veil, which had hitherto hidden their nefarious traffic from the world, and put all kinds of obstacles in the way, trying their best to make them give up the quest. In addition to this Baker had great difficulty with his own people, who were so cowardly that they feared to follow their leader into the unknown regions to the south. After many difficulties and numerous narrow escapes, however, the intrepid travellers reached the country of King Kamrasi.

Here they found themselves obliged to suffer the cupidity of one of the most avaricious and greedy beings it is possible to imagine. They were for some time subjected to a process of extortion. Every article in their possession was begged for in turn. When, after with great difficulty getting the king to give them an escort, they were about to turn their steps in the direction of the lake, Baker was asked to make an exchange of wives before he left. You may imagine that the travellers' cup was at last full to overflowing. Lady Baker was very naturally terrified at such a request, and Sir Samuel was more than indignant! Drawing a revolver he held it to the breast of the greasy villain who had made the request, and told him if he dared to repeat it, all the strength of the kingdom of Unyoro would be powerless to save his life!

The journey to the lake was at last commenced, but, whilst crossing a swamp on the way, Lady Baker was struck down with sunstroke, and was afterwards carried on, day after day, in a totally unconscious condition. Baker himself was broken down with fever, and he says that one day they were both so near death that one of their people actually went the length of making a new handle for their pick-axe to dig their graves with. At last, however, Sir Samuel and the devoted Lady Baker both recovered, and in due time they were rewarded for their sufferings by the first view of the Luta Nzige.

They struck the lake some distance to the south, on its eastern shore. Here they obtained canoes, and set sail on a voyage of exploration, being without doubt the first white people to float on the waters, to which they gave the name of Albert Nyanza, after the royal consort of our beloved queen; fitting name for the lake to receive, as it is the geographical consort and companion of the Victoria Nyanza. Their voyage was continued to the northward along the eastern shore until, at the north-east corner, they found an inflowing river. Passing down this some little distance, they beheld a sight which must hold a prominent place in their memories to the end of their lives. This was a lovely cascade formed by the Somerset River, which Speke had seen flowing from the Victoria Nyanza over the Ripon Falls, now plunging headlong some 120 feet down into the Albert Lake. Baker named this Murchison Falls, in honour of the then president of the Royal Geographical Society. Leaving this point, and paddling further to the north, they found the outlet of the lake and beheld the river there flowing away to the northward.

They now retraced their steps to the capital of Kamrasi, and as soon as they could free themselves from the power of this potentate made the best of their way back to civilisation.

This journey and discovery of Baker's is the more remarkable in the annals of daring and dangerous travel, from the fact that its dangers were shared by Lady Baker, then a young wife, I believe, still in her teens.

Another lady who did good service, about this same time, was a brave Dutch lady, Mdlle. Tinné, who penetrated the marshy districts of the Bahr-el-Gazelle. She, unhappily, eventually lost her life in the country. Petherick and the Italian traveller Miani also pursued their researches in the same district.

The discoveries of Speke and Grant, and of Baker, when brought to the notice of the public of Great Britain, again set the whole geographical world in a state of excitement. Speke was received with open arms by the public, and was justly feted and praised. In articles he wrote and speeches he delivered at the time, he claimed that he had in 1858, "hit the Nile on the head, and in 1863 driven it down to the Mediterranean." Captain Burton was still unconvinced of the value of his quondam companion's discoveries. Theoretical geographers came forward with all kinds of theories, and the whole subject was discussed from various points of view.

In September, 1859, Livingstone had discovered the Maravi or Nyasa Lake, and this was in turn dragged into the general discussion of the geography of the lake regions of Africa. One theory set forth was that Tanganyika must be connected to Lake Nyasa, and by that means contribute its waters to the Zambesi. In time the position of Speke's Mountains of the Moon was modified, and the whole range subsequently disappeared altogether from the maps; and the Rusizi River, at the head of Lake Tanganyika, was again made to play the part of a theoretical outlet.

Captain Burton prepared a paper for the British Association, which he afterwards enlarged and issued in book form under the title of the "Nile Basin." In this work he expressed his belief that the Tanganyika would ultimately prove to be identical with the western of Ptolemy's lakes forming the Nile fountains. He altogether opposed the idea of the lake seen by Speke in 1858 being identical with that seen by Speke and Grant some years later in Uganda. In support of his view was the fact that Speke gave a considerable difference in the levels of the waters seen by him in the south and north, besides which it had been stated by Arabs that there was actually a road right through the district which Speke's lake was supposed to occupy. With regard to the Mountains of the Moon, Burton appears to have believed that the range was represented by Mounts Kilimanjaro and Kenia, and the highlands by which they are connected. This was practically the view suggested, so long before as 1848, by Dr. Beke, the Abyssinian traveller who claimed to be the "theoretical discoverer" of the Nile sources. You will find the mountains so placed in the map which I have copied from his book, published shortly after Burton's discovery of Lake Tanganyika. This map is instructive, also, from the fact that it applies Ptolemy's lakes and Mountains of the Moon to a modern map.

The following quotations will, I think, sum up the opinions of Burton, who it must be remembered represented a certain school of geographers at the time. He says the alterations he would make in Speke's map were: "(1) Draining Tanganyika into Luta Nzige." I may say here that Baker had understood from the natives that a canoe could actually be paddled from the northern lake right down to Ujiji, on Tanganyika. "(2) Converting the Nyanza (Victoria) into at least a double lake;" and "(3) Detaching the Baringo from the Nyanza waters." Speaking of the Asua River he says: "I believe it to be the real White Nile, the so-called Nyanza effluents being of minor importance;" and further, "I cannot but believe the Tanganyika to be the Western lake-reservoir of 'Father Nile.' . . . That the Tanganyika is the western top, head, or reservoir—not *source*—of the great Nile, and that the Baringo . . . is the eastern, I have little doubt."

In the midst of these discussions poor Speke met with the accident that so suddenly terminated his life.

Livingstone, who was then in England, after his second Zambesi expedition, leaned to the opinion that Speke was to some extent mistaken as to the importance of the lake he had discovered. He believed that Lake Tanganyika would be found to play an important part in the geography of the Nile, but was altogether opposed to the idea that it was connected to the Nyasa.

The result of these discussions and varying opinions was that Livingstone, at the invitation of the Royal Geographical Society, set forth again for Central Africa, to endeavour to clear up the doubtful points. This expedition proved to be, perhaps, his greatest work; but, alas! it was his lot never to return home alive, nor to understand and grasp the full value to the world and civilisation of the discoveries he then made. It is a remarkable fact, that although Livingstone devoted a great portion of his existence, and eventually gave his valuable life for the Nile, it was never his lot to gaze upon its waters, except perhaps in Egypt! Nevertheless, his discovery of the Congo sources is likely to prove, indeed has proved! of far more value in the opening up and civilisation of Africa than the Nile is ever likely to be!

Must I apologise for introducing the work of Livingstone into this paper? I would plead that no history of Nile research can be complete that does not refer to the devoted wanderings of this noble and unassuming hero! The additions to our knowledge of the interior of Africa, and the vast blanks upon the map which were filled up by Livingstone on his last mission, are well known to all; but, as there is such a deeply pathetic side to the story of his wanderings and discoveries, I crave your indulgence for a few minutes while we notice what they were, and refer to the hopes and fears which were awakened in the heart and mind of the heroic traveller.

Livingstone, as you are aware, started from the mouth of the Rovuma and marched towards the Nyasa. He then skirted the eastern shore of the lake towards the south, and crossed it at its south end. His steps were then directed towards the north-west until he struck the south end of Lake Tanganyika. This set at rest the question of the connection of Tanganyika and Nyasa, and for the first time fixed the southern end of Lake Tanganyika. Writing on this point Livingstone says: "One bold constructor of maps has tacked on 200 miles to the north-west end of Lake Nyasa, a feat which no traveller has ever ventured to imitate. Another has placed a river in the same quarter running 3,000 or 4,000 feet up hill, and named it the New Zambesi, because I suppose the old Zambesi runs down hill. I have walked over both these mental abortions, and did not know that I was walking on water till I saw them in the maps."

Leaving Tanganyika, Livingstone travelled westward, discovered Lake Moero, and then worked southward, along the banks of the Luapula, till he discovered Lake Bangweolo, and proved that the Chambeze River flowed into that lake. The Chambeze had been previously known to the Portuguese, but was believed by them to be a branch of the Zambesi, doubtless in great measure owing to the similarity of names. Retracing his steps, northwards, Livingstone followed a river, flowing from Lake Moero, under the name of Lualaba. This he traced as far as Nyangwe, in Manyemma, but was there obliged to turn back and retrace his steps to the Tanganyika, which lake he crossed to Ujiji.

The great river he had been following he believed to be the Nile. The following extracts from a letter he wrote to Lord Clarendon will, perhaps, best indicate his opinions and beliefs in this direction. He says: "I have ascertained that the watershed of the Nile is a broad upland, between 10° and 12° south latitude, and from 4,000ft. to

5,000ft. above the level of the sea. Mountains stand on it at various points. . . . The springs that rise on it are almost innumerable—that is, it would take a large part of a man's life to count them. . . . These are the ultimate or primary sources of the great rivers that flow to the north in the great Nile valley. . . . The mountains on the watershed are, probably, what Ptolemy, for reasons now unknown, called the Mountains of the Moon. From their bases I found that the springs of the Nile do unquestionably arise. This is just what Ptolemy put down, and is true geography. . . . I have a very strong impression, that in the last hundred miles the fountains of the Nile, mentioned to Herodotus by the Secretary of Minerva, in the city of Sais, do arise, . . . and half the water flows northward to Egypt, the other half south to Inner Ethiopia." Again he says: "In my attempts to penetrate farther and farther, I had but little hope of ultimate success; for the great amount of westing led to a continual effort to suspend the judgment, lest, after all, I might be exploring the Congo instead of the Nile."

These quotations prove that Livingstone believed he had discovered the head waters of the Nile in what we now know to be the sources of the greater stream, the Congo. Another quotation taken from his last journals, and which is, of course, familiar to all, seems to show what it was that caused him to form the theory he did. He writes: "One of my waking dreams is that the legendary tales about Moses coming up into Lower Ethiopia, with Merr, his foster-mother, and founding a city which he called in her honour Meroe, may have a substratum of fact. . . . I dream of discovering some monumental relics of Meroe." This seems to have influenced him somewhat in forming his opinions, but it was, of course, greatly borne out by the facts he observed when viewed in the light of the imperfect information he possessed.

It was when Livingstone visited Ujiji, after his journey to Nyangwe, that he was discovered in a state of illness and destitution by Stanley in 1871. Up to this time Livingstone believed that the Rusizi River at the north end of Tanganyika was the outlet from the lake; and that it flowed through the Albert Nyanza of Baker, and so found its way to the Nile. At the suggestion of Stanley they together visited the north end of the lake, and proved for ever that there was no outlet there, and that the lake was at any rate not connected with the Nile in that direction.

Livingstone believed that the River Lualaba, that he had followed so far, ultimately found its way into the Nile by continuing its flow northward until it joined the Bahr-el-Gazelle of Petherick.

On being left by Stanley the heroic and aged explorer again visited the neighbourhood of Lake Bangweolo, in search of the ultimate fountains of Herodotus and Ptolemy; but laid down his life on the shores of the lake, without ever completing the knowledge he was in search of, or knowing the value of the discoveries he had made.

Livingstone's work was a grand one! although it was never completed, and therefore did not directly result in the object he was striving for. He did not discover the sources of the Nile!—he was never even permitted to gaze upon the upper waters of the historic river!—but who shall say that his work did not ultimately lead to the settlement of the problem, and of the problem of the Congo too? Did not the influence of the "old explorer, a grand spectacle and a specimen of most noble manhood," fire the zeal of the young American who was sent into Central Africa to find and aid him? Did not his enthusiasm, for Africa and the African, enter into the very soul of the younger man; causing him to devote his best energies, and best days, to the completion of the work, which his aged companion and friend had relinquished only with his life? Yes! Surely we may say, that when the young American discovered and relieved the aged Livingstone at Ujiji, the elder man in return gave to the world a Stanley; who was to take up and complete the life-work of the fallen hero, and become himself the greatest explorer of the ages!

Many doubtful points had been cleared up by Livingstone, but just as many new problems had come to the front and remained to be solved. He had proved that the Nyasa and the Tanganyika were certainly not connected; and he and Stanley had together visited the Rusizi River, and set at rest the mystery as to the direction of its flow. On the other hand, he had discovered the great lacustrine stream, the Lualaba, and it was quite unknown whether it belonged to the system of the Congo; or, as was supposed by him, to that of the Nile. No outlet had been discovered to Lake Tanganyika, and doubts were expressed as to whether the lake possessed an outlet at all, in spite of the freshness of its waters. Livingstone had hinted at a possible subterranean outlet, but no satisfactory evidence of this existed. Lake Victoria Nyanza, of Speke, had been split up into several on the map of Livingstone, based on Arab and native report. And, altogether, the whole question was as much mixed as ever.

This then was the state of affairs, when, in 1874, Stanley stepped into the breach, resolved, if need be, to become "the next martyr to geographical science;" or, if spared, determined, if possible, to clear up all that remained still problematic and incomplete of the discoveries of Burton, Speke, and Livingstone!

Setting forth for Africa, Stanley landed at Zanzibar, and soon after pushed into the interior, arriving at the south end of Lake Victoria on February 27th, 1875. He almost at once commenced a survey of the lake. We cannot follow him on his voyage; it must suffice to say that he circumnavigated the lake, following every indentation of the shore except at the south-west corner. Here, owing to the warlike character of some island tribes, he was unable to do so, so thoroughly as elsewhere. This point we shall have occasion to refer to again presently. His survey proved that Victoria Nyanza was, as Speke had claimed, *one* large lake, but having no connection with the Baringo.

Stanley next tried to reach the lake discovered by Baker, with the intention of sailing its waters and surveying its shores. This he was unable to do, owing to difficulties which we cannot now go into. He did reach a lake to the west, lying on the equator, and which he believed at the time to be the Albert Lake, it being known to the natives as Muta Nzige. To a large gulf of this water, viewed by him, Stanley gave the name of Beatrice Gulf. Baulked in his intention of surveying the Muta Nzige, the traveller at once "made tracks" for the Tanganyika, passing through Karagwe, formerly visited by Speke and Grant, and making the acquaintance of the "gentle

Rumanika" on the way. While in Karagwe, Stanley was able to learn a great deal about the geography of the Kitangule River of Speke. He gave it the name of Alexandra Nile, in view of its being the largest affluent of the Victoria, and therefore the main feeder, in that direction, of "Father Nile." He heard of the existence of a lake from which the river was said to flow, which he named Alexandra Nyanza. This lake, I believe, has never yet been visited by Europeans.

On reaching the Tanganyika Stanley found that Lieut. Cameron had forestalled him. That gentleman had left for the interior to assist Livingstone just prior to the receipt of news of the aged traveller's death. Having reached Lake Tanganyika, Cameron, as was natural to a British naval officer, proceeded to make a survey of the southern half of the lake. The result was the discovery of an outlet on its western side. Stanley also voyaged round the lower half of the lake, and thus completed his own circumnavigation of Tanganyika, he having, as we have seen, previously surveyed the northern portion in conjunction with Livingstone. He was able to confirm Cameron's discovery of an outlet, by means of which it was then supposed, and has since been almost proved, that Tanganyika pours its surplus water into the Lualaba.

Stanley now turned his steps towards the majestic but mysterious river, determined to clear up its mystery or die in the attempt! He found that Cameron had followed the stream until he reached Nyangwe, but here, like Livingstone, had been compelled to abandon the quest.

Stanley was able to take up the work at this point and follow it to a successful issue. He followed the river through every conceivable difficulty, with terrible hardships, and with great loss of life; but he followed it successfully to the ocean, and thus proved that the great river of Livingstone, and which Stanley named after its discoverer, was really the Congo, and in no way connected with the Nile, as Livingstone had supposed. We must not digress to follow Stanley on this adventurous voyage; our subject is the Nile, and we must leave the Lualaba altogether, from the moment that it ceases to have any problematic connection with the river we are considering. Thus was one more point definitely settled.

During the time that Stanley was engaged exploring Lake Victoria, and tracing the Lualaba to the ocean, Gordon had been engaged on the Nile, in the neighbourhood of the Albert Lake. He and his lieutenants—Gessi, Long, Mason, and Linant—had followed the river from Gondokoro to Lake Victoria, and had surveyed the portions between the points seen by Speke and Grant, and Baker.

Gordon himself discovered the Fola or Mekade Falls, doubtless the point which was reached by the expedition of Nero; and Long discovered Lake Ibrahim, or Gita Nzige. Gessi circumnavigated the Albert Nyanza, and it was again circumnavigated and surveyed by Mason, and Gordon himself sailed its waters.

The surveys of Gessi and Mason proved that the Albert Lake was far shorter than had been previously supposed, and this fact led to the water known as Muta Nzige, seen to the south by Stanley, in 1876, being considered as a distinct lake altogether. Thus the whole question of the Nile sources appeared to be practically settled, the only point apparently remaining incomplete being the problem of the Muta Nzige. Did it belong to the system of the Nile, or to that of the Congo, and what was its area and extent?

These points remained in a state of uncertainty until Stanley was himself again taken to the neighbourhood on another quest, the relief of Emin Pasha in 1887. From 1876 to 1888, twelve years, we got no further information of the geography of the Muta Nzige, and indeed there appeared to be little to learn. The sequel, however, proved that there were still some interesting facts for the geographer, which had been slumbering and hidden in the recesses of "Darkest Africa." One of the greatest of these, and perhaps the most interesting of all, it was the lot of Stanley to discover.

The "Mountains of the Moon" had been talked of and written about since the days of Hekotæus, Hipparchus, and Ptolemy. Various travellers and geographers, as we have seen, had propounded different theories with regard to their probable situation, and others had endeavoured to explain the whole thing away as a mere myth. Beke, Burton, Speke, and Livingstone had each theorised on this point, but with little success, until the world had quite looked upon the matter as mere legend, or as ancient travellers' tales. Stanley himself never betrayed any sign of having any distinct theory on this matter, and has generally been content to confine himself to facts proved to demonstration. It was the lot, however, of our latest, and perhaps greatest, traveller to have the honour of actually discovering, and geographically locating, the long-lost and wandering "Mountains of the Moon."

While resting on the plateau land above the south-west corner of the Albert Lake, on the 25th of May, 1888, Stanley's attention was called to a towering mountain height capped with snow, which, from where he stood, lay about 50 miles away to the south-east. Twelve months later on his homeward journey, after crossing the Semliki River, which he found flowing into the south end of the Albert Lake, Stanley found himself following a range of hills the tops of which, towering up some 19,000 feet high, were covered with perpetual snow. This, melting under the action of a tropical sun, poured its volumes of water into the Semliki River at his feet, which in turn conveyed it thence to the Albert Lake and onwards to swell the torrent of "Father Nile."

Stanley writes: "Little did we imagine it, but the results of our journey from the Albert Nyanza to . . . where I turned away from the newly-discovered lake in 1876, established beyond a doubt that the snowy mountain, which bears the native name of Ruwenzori or Ruwenjura, is identical with what the ancients called 'Mountains of the Moon.'"

"Note what Scheadeddin, an Arab geographer of the fifteenth century, writes: 'From the Mountains of the Moon the Egyptian Nile takes its rise. It cuts horizontally the equator in its course north. Many rivers come from this mountain and unite in a great lake. From this lake comes the Nile, the most beautiful and greatest of the rivers of all the earth.' If, adopting the quaint style and brevity of the Arab writer, we would write of this matter now, we would say: 'From Ruwenzori, the Snow Mountain, the western branch of the Upper Nile takes its rise. Many rivers come from this mountain, and uniting in the Semliki River, empty into a great lake, named by its discoverer the Albert Nyanza. From this lake, which also receives the eastern branch of the Upper Nile, issues the true Nile, one of the most famous rivers of all the earth.' "

You will remember that Speke was told, by an Arab at Kazé, that to the north of Karagwe, a high mountain was to be found which was covered by "white powder." Surely it must have been the snow-capped Ruwenzori which was then referred to!

Continuing the homeward march, the Muta Nzige was visited by Stanley, and three of its sides followed. It is found to pour its overflow waters through the Semliki River into Lake Albert, and is, therefore, the south-western source of the "holy river." Stanley and his officers decided to give the name of Albert Edward to the newly-defined lake, in honour of our Prince of Wales. I may, perhaps, be forgiven if I suggest that the names of the three lakes, Victoria, Albert, and Albert Edward, do not, in view of our most recent knowledge, seem to be so well arranged as they might be. The Nyanza of Speke and the Muta Nzige of Stanley together give birth to the lake of Baker. Would it not, therefore, be more in keeping with the facts of relationship if the lakes of Stanley and Baker could change names? We should then have the Victoria and the Albert for the parents, and the Albert Edward as the natural offspring of both!

There is one other link in the chain of our tale to tell. You will remember that I referred to a difficulty that Stanley met with, when surveying the Victoria, in following the shore line at the south-west corner. Well! at this point, on his return journey last year, Stanley struck the lake, and what was his surprise to find that there was there an extension which he had overlooked at the time of his voyage in 1875. The bay, or extension, is calculated to cover an area of 6,000 square miles, equal to the whole of our county of Yorkshire. I have proposed, in a paper which I recently read before this Society, to call this extension Stanley Bay, in honour of the traveller who has done so much to make known the geography of the lake. I fear I can hardly hope that my suggestion will be adopted.

I have now, in my crude and imperfect manner, put before you the leading facts connected with Nile research and discovery. I think you will all agree that the knowledge of the river, which is now fairly complete, has only been obtained at the cost of great determination, unbounded energy, and intrepid bravery; and that we may truly call such men as Bruce, Burton, Speke, Grant, Baker, Livingstone, Gordon, Stanley, and others, heroes of a high order. The knowledge which their devotion has brought to light is of great value; but I think that Nile history teaches us a powerful lesson of the frailty, weakness, and puny ability of the best and bravest men it is the world's honour to give birth to and possess. As one hero after another has thrown himself at the problem of the Nile, and in turn retired more or less beaten, has not the river spoken to us plainly and in thundering tones, and, using the language of Tennyson, told us:

"Men may come and men may go,
But I go on for ever."

EARTH-SCULPTURE, AS ILLUSTRATED IN THE GORGES OF THE TARN, AND AT MONTPELLIER-LE-VIEUX, SOUTHERN FRANCE.

(*Illustrated by a Magnificent Collection of Photographs.*)

By Mr. MARK STIRRUP, F.G.S.

[Addressed to the Members, at the Schiller-Anstalt, Monday, Nov. 24, 1890.]

I COME before you this evening to give an account of a visit I paid, in the spring of this year, to the "Causses of Languedoc," a district of whose curious and interesting natural phenomena I had the honour last year, through the kindness of M. Martel, of Paris, one of its explorers, to show you some unique photographic views, and to describe some of its most remarkable features.

On the present occasion I do not intend to take up your time by relating any of the ordinary incidents of travel that befall visitors to a somewhat sequestered and isolated region, but purpose confining myself to the consideration of some of the more important physical and physiographical lessons which an examination of this district has to furnish. Suffice it to say that the journey to this land of novelties, though in a certain degree wearisome, caused by the slow rate of travel and railway delays, may be comfortably accomplished, if not pressed for time, in three or four days from Manchester.

The most direct route is through Paris, starting thence from the Lyons Railway terminus, *viâ* St. Germain des Fossés, to Arvant, where you join the Ligne du Midi.

A pleasant break in the journey may be made at Clermont Ferrand, which lies under the shadow of the Puy de Dôme, and within easy access of some of the most interesting of the extinct volcanoes of Central France.

Having reached Arvant, you have the choice of two routes of approach to the Pays des Causses by either of two lines of railway, the Ligne du Midi and the P., L., & M., to Nîmes and Marseilles, both of which pass southwards and bound the country of the Cevennes on the western and eastern sides respectively.

If you take the former, you pass by Neussargues over the celebrated structure of M. Eiffel, the Viaduc de Garabit,[*] the span of whose arch and height above the valley below was said to be the greatest in the world, but it is now considerably exceeded in extent of span by the Forth Bridge, near Edinburgh. The

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[*] It has been calculated that the second platform of the Eiffel Tower could easily pass under the arch of the Viaduc de Garabit, and that the towers of Notre Dame de Paris, with the column of the Bastile on the top of them, would still not reach the level of the rails by about 24 feet.

Ligne du Midi gives you also the opportunity, by stopping at Marvejols and taking the branch line to Mende, to enter the country of the Causses from the north; but should the tourist be pressed for time, it is better to continue on the main line as far as Millau, which is the nearest station and easiest route to Montpellier-le-Vieux. If, on the other hand, the traveller proceeds from Arvant on the Nîmes line, passing to the east of the Cevennes, Villefort or Alais would perhaps be the most convenient stations, though both are some considerable distance away from the Gorge of the Tarn and Montpellier-le-Vieux.

The recent extension of the Ligne du Midi and completion of the Viaduc de Garabit have been the means of opening up this old-world corner of France, previously unknown to the ordinary traveller, whose varied natural attractions I had the pleasure of bringing under your notice a few months ago.

As you might expect, a peasantry thus isolated from communication with the outer world were both ignorant and superstitious. They took no interest in the natural phenomena by which they were surrounded, whose wonders they did not comprehend, and of whose picturesque value they had never dreamt. Their river gorges of abnormal depth, the subterranean caverns and hidden streams of their calcareous plateaus, their fantastic rocks perched high above the valleys, had no meaning for them. Everything abnormal and strange in the appearance of things was conceived to be the work of the Evil One, and in consequence that extraordinary labyrinth of rocks named Montpellier-le-Vieux, or the City of the Devil, was avoided, from motives of fear and superstition, and none but the adventurous shepherd ever trod its devious paths. These barren rocks were not considered an attraction to the locality, but rather an excrescence on the fair face of nature; therefore no passing traveller ever had his attention drawn to them. Now, however, since a tide of tourist traffic has been turned this way, the inhabitants find a source of unexpected wealth in these weird spots they had previously shunned.

This region, however, claims mainly our attention because it offers a remarkable example of one of those fundamental and elementary truths with which the geologist or the physical geographer has to deal, viz., the power of rain, in the shape of running water, to sculpture and modify the surface features of the land.

Other agents there are which have played their part in moulding certain portions of the earth's surface, and which still labour on in their destructive and never-ending work, such as the glacier flow and the ocean surge, but of these I do not intend to speak to-night.

Water is the great solvent of rocks, and, with the aid of frost, one of the great agents of rock disintegration and decay.

But the power of water to erode is modified and restricted by the character and mineral composition of the rocks themselves.

Some rocks are hard and compact, and seem to defy to the uttermost the attacks of weathering and denudation, as in the case of some granites and crystalline rocks, while others of a softer nature yield readily to external meteoric influences, as various clays, shales, and limestones.

It is to the various modifications in rock structure and composition that we owe that charming diversity which the earth's surface presents—not one dull uniform level, as it otherwise would be, but that pleasant interchange of mountain and plain, hill and valley, ravine and scar, which stamp the picturesque.

Those dizzy heights which the mountaineer delights to scale would not exist if they were not composed of materials altogether different, or differently combined, from the rocks which form the lower hills or the surfaces of the valleys. It is the hard rocks which form the mountains, and the soft ones the valleys.

This diversity of resistance to meteoric influences is the immediate and controlling cause of those varied contours which land surfaces present. Thus you will see that the sculpture of the land is intimately associated with its rock structure.

The rate of this process of sculpturing and denudation is influenced by many circumstances, among which altitude and climate are the most important.

In a land where the rainfall is great and its rocks exposed, *i.e.*, bare of vegetation, the erosion will be rapid; and where the slope of the mountains is steep, there the work of disintegration and erosion will be most manifest.

These agents of destruction of which I have spoken would, at length, if there were no counter-action, no corresponding elevation of the earth's surface, carry the dry land beneath the surface of the sea.

In Nature's economy, however, compensatory movements do exist, such as the gentle and gradual uplift of the land which has been detected in Sweden, and those more visible but violent and terrible upheavals due to active volcanic forces—indeed, the record of the earth's history is one of continual change and movement. When the land first rose from the sea, then its sculpturing began; when the mountains were uplifted, then the rain first channelled a path down their slopes, eroding in its passage the surface over which it travelled. The particles thus eroded from the parent rock are gradually transported to lower levels, to fill the valleys or cover the plains; but they rest not there—the march is in time again resumed, until those grains of sand or mud reach their destined goal, the ocean. There, at last, they will lie tranquil until raised again by some earth movement at a subsequent geological epoch, when the cycle of revolution will again commence. So the mountains are brought low and the valleys exalted, and the hills carried into the midst of the sea.

There was a time in the history of the earth, in its youth primeval, when its surface outlines did not present the rich variety of alpine heights, of crag and cliff, which now, in its maturer age, it offers to our view.

Truly it may be said that its face is scarred and furrowed with the elemental war of ages; yet all this fretting and chiselling have not marred its features, but only disclosed beauties once hidden deep below the surface, now revealed in forms of nameless shape, which astonish us with the boldness and fertility of Nature's art.

After these general remarks on earth-sculpture I must say a few words on the special examples that will be submitted to you in the photographic views taken from the Gorge of the Tarn and the plateau scenery of the Causses of Languedoc. The country locally known as the Causses is a dry and barren region, divested of wood, sparsely inhabited, and yielding few agricultural products; its area is some 50 or 60 miles square, and ranging from 2,600 feet to nearly 4,000 feet above sea level. It extends into the departments of the Lot, Lozère, Aveyron, Gard, and the Hérault. From its position on the map, its southerly latitude, not far distant from the shores of the Mediterranean, you might naturally presume that the climate would be a genial one, but this is not so, except in the deep and sheltered valleys, for climate does not depend on latitude alone, but on height above sea level, the direction of the prevailing winds, and other controlling causes. Owing to the altitude of the Causses, and their proximity to a high range of mountain land, the climate partakes of an alpine character, particularly rigorous in the winter, when deep snows cover their surface and violent storms sweep over them from the mountains. In the summer it is a dry and thirsty land, burned up with intolerable heat. The rain which should moisten and refresh the ground is not retained near the surface, owing to the porous and fissured nature of the rock. The rain as it falls penetrates by innumerable cracks and swallow-holes to underground channels, by which it makes its way to the river gorges, whence it issues, often in considerable streams, from those mysterious springs which feed such rivers as the Tarn, the Jonte, and the Dourbie.

Among the special features of the Causses are its river gorges, narrow ravines or cañons, which separate the once continuous plateaus into three or four principal masses, divided by deep sinuous cracks, along which the rivers find their way. The walls of these gorges are for the most part vertical, rising from about 650 feet to, in some cases, nearly 2,000 feet above the stream.

The calcareous rock which forms the surface of the Causses is cracked and fissured in all directions, penetrated by numerous vertical and deep swallow-holes (*avens*), which are connected with countless and unknown caverns and tunnels, through which flow subterranean streams. These characteristics, together with the groups of eroded rocks of marvellous shapes which surmount the plateaus in several places, make it a region unique in France, if not in Europe. Nowhere, certainly, in Europe are clearer or finer evidences of the erosive action of water than in this secluded, and hitherto almost unknown, region.

The same kind of phenomena, doubtless, is to be seen in every limestone country, even near home, on the flanks of Ingleborough, or in Derbyshire; but such examples differ much in degree or intensity from those which we are at present depicting.

To find mightier instances than those to be submitted to you, we should have to visit the Western States of America, where in the High Plateau region of Arizona and Utah—that land of marvels—one might see the most marvellous river gorges in the world, where rivers flow in ravines thousands of feet deep and hundreds of miles long, through vast tablelands of nearly horizontal strata. In the language of one of the explorers, the view of the Grand Cañon of Colorado is one of the most sublime and awe-inspiring spectacles in the world.

This difference of degree or intensity of the erosive action of streams in various parts of the world is due not only to some difference in the mineral constituents or in the structure of the rocks, but to the effects of climate, whether humid or dry. The amount of rainfall must affect the process of erosion, and wherever the slope of the ground is steepest, other things being equal, there erosion will be the most rapid.

The rocks which produce the special scenery of the Gorge of the Tarn and the surrounding plateaus belong to what is known to the geologist as the Liassic and Jurassic formations, and consist mainly of a series of limestones, dolomites, marls, and clays, which frequently alternate and intermix. Rain, charged with carbonic acid, obtained from the air, and organic substances in the soil, acts, as you know, both chemically and mechanically upon limestone rocks, whereby its destructive power is much increased. Limestones and dolomites, rocks liable to be thus wasted and worn, form the principal constituents of the great walls of rock which border the Tarn and some of the neighbouring streams. (Dolomite is a limestone in which magnesia is associated in very strong proportion to the carbonate of lime, hence they are often called Magnesian Limestones.) It is especially due to these dolomitic rocks that all the picturesque features of the region of the Causses are due. Abounding, as they do, in joints and fissures, rain falling on their surface readily percolates the mass, finding its way by subterranean passages to the level of the valleys. The rocks being for the most part horizontally bedded, the vertical joints which traverse the dolomite cleave it into huge blocks and deep chasms, which give it the appearance of embattled cliff or pinnacled crag, upon whose summit many another fantastic form lies perched, delighting the student of Nature's architecture.

A few words in conclusion: You have seen by the photographic views the important part that water plays in sculpturing the surface of the earth, but its wonder-working and transforming power is not yet finished. Deep beneath the cracked and fissured surface of these limestone plateaus, dark corridors and caverns have been hollowed out of the solid rock, whose walls are clothed with all the beautiful imagery that stalactite and stalagmite can assume; but of these marvels the time and the hour forbid me to speak.

Probably, as these views of scarped cliff and sculptured rock have passed before your eyes, the thought may have arisen in your mind, How long can it have taken to carve and erode all these fantastic forms out of the once solid and unbroken rock? At what remote period of time did the work commence? Have we any means of gauging the length of time it has taken to perform this gigantic work? If you ask me for an answer to these questions, I should be obliged to say I do not know; I cannot tell.

We have no natural chronometer, no unit of measure, no standard of comparison, by which the lapse of time can be calculated. Attempts have been made, from time to time, to gauge the amount of weathering or surface waste of limestone, as in the case of slabs used for tombstones, the date of whose erection was known, the calculation resulting in the rough average of one inch of waste in 300 years being obtained as an estimate. Herr Pfaff, a German chemist, made careful experiments on a slab of Solenhofen limestone, when he calculated that a crag of such limestone would be lowered one metre in 72,000 years by the solvent action of rain. This would be at a rate six times less than in the former instance. D. Mackintosh gives one inch in a thousand years as the average rate of denudation of Mountain Limestone.

So many conditions or contingencies would have to be taken into account that estimates such as I have given can be of very little help in affording reliable data by which to calculate the age of the rocks of any past geological period.

In fact, no mystery is more inscrutable, no problem more difficult to solve, than the duration of geological time.

We ask the rocks, but they answer not—we scrutinise their sculpturings, but we cannot read the hieroglyphs in which the legend is carved. The record is unintelligible, the story of the past is yet untold.

A MOUNTAIN DISTRICT OF CENTRAL CHINA.

By Mr. E. G. HILLIER, of Tientsin.

[Read to the Members in the Library, December 19th, 1890.]

I HAVE been honoured with an invitation to relate to you some of my experiences during a recent trip I made in the mountainous districts of south-west Ichang. Descriptions of travel in China have been so often given before by able travellers qualified by scientific training, an advantage which I am sorry to say I do not possess, and the usual incidents of such a journey as I am about to describe are now so well known to everybody, that it is with considerable diffidence of my powers of making this paper an interesting one that I have committed myself to the task of preparing it. The route over which my companion and myself travelled is so far worthy of notice that many parts of it have never before been visited by a layman in European dress, and for the student of botany, geology, or any other branch of natural history, I can conceive of no more interesting field. Unfortunately, as I say, we possessed no qualifications for making observations of really scientific value, and I must trust to the fact of the scene of our travels lying among a mass of comparatively unexplored mountains and forests within only a few days' journey of an open port, to make a simple description of its incidents and scenery interesting to you.

I was attracted to the country in the first place by the accounts I had heard of its picturesque wildness and wonderful virgin growth of forest. And I may say that my appetite for beautiful scenery and rough primitive surroundings was amply satisfied. The prospect of sport was also another attraction, as I have always clung to the idea that an untouched forest country under the perfect conditions of climate that exist in Central China during the winter months would afford the sportsman an unequalled field for his passion, that pheasants could be knocked over with a stick, and bears and tigers slain in the ordinary course of self-defence from their attacks, provided indeed the engagement did not end the other way. This illusion I may say at once we were very early compelled to relinquish, and we soon decided that the man who wants to make a large bag cannot do better than confine himself to the valley of the lower Yangtze. The country we visited was for purposes of sport perfectly useless, and I imagine the same is the case all over the great mountain ranges of Central and Southern China. It is one thing for game to exist and quite another thing to shoot it, and although the accounts we received of the abundance of game were most inspiriting, we generally discovered on cross-examination of our informant that the place was 100 *li* further on, that he had never shot anything there himself, but that he knew people who had done so, and that with our superior weapons we were sure of success. Game exists, no doubt, in a certain quantity all over these mountains, but the thick and impenetrable jungle affords a cover to the wild birds and beasts, which they have no inducement to leave, at any rate during the winter months, when the scanty patches of maize stubble are lying fallow. In the Autumn, they say, before the grain is cut, the maize fields swarm with pheasants, pigs, and bears, which come down to eat the crops in such serious numbers that the country people have to sleep in the fields at night to scare them off. This is probably true in some parts, but the idea of going to shoot pheasants in July in a cornfield is rather shocking.

The Reeve's pheasant is fairly abundant, more so than the common ringed pheasant. The golden is very shy, and we only saw two the whole time, although our beaters frequently reported having put them up. Both species keep to the thickest cover, and their haunts are almost impenetrable. Imagine the side of a gorge 1,000 feet in height, and having a gradient of anything from 60° to 80°; sprinkle this plentifully with boulders and slabs of limestone rock, and cover it with a jungle of prickly oak, birch, and an occasional pine, rhododendrons ten feet in height, and a thick under-growth of creepers and thorns of every size and degree of toughness and sharpness. After penetrating 20 yards into such cover, hauling yourself painfully up with your left hand, your gun at half cock in your right, thorny creepers across your face and round your legs, an apparently impenetrable mass of jungle before you with probably a slippery moss-covered mass of boulders to negotiate, it is possible that a flock of half-a-dozen Reeve's pheasants may get up within five yards of you. You can hear, but you cannot see them, and as their tantalising whirr grows fainter in the distance, and you feel the hopelessness of the situation, you make a mental and forcible note, as you slowly extricate yourself from your thorny trap, that walking up pheasants in the jungle does not pay.

Travelling in such country is very slow. Seventy-five *li* in one day is a very exceptional stage to make, and is only practicable downhill and with the conditions of weather and roads in one's favour. I say roads, but it must be understood that in the districts over which we travelled there are no roads, but simply tracks in the mountains, which in many places it requires an experienced eye to distinguish from goat-tracks. In some places, however, where the difficulty of the country demands it, the route has been made practicable by what must have been expensive cuttings in the face of the precipices, and rocky steps, which sometimes seem almost interminable. All transport is accomplished on the backs of porters, and the native mountaineers, from the age of toddling upwards, are accustomed to carry the "pei-loong" or back-basket, a conical crate of bamboo slightly flattened to fit against the back, with two loops of flat bamboo passing over the shoulder, and sometimes of beautiful shape and workmanship. Everything is carried in or on the top of these from a baby to a picul of salt, and a "pei-loong" is as necessary an article of personal furniture in that country as an umbrella in England. The usual load for an able-bodied peasant, who is not what I might call a professional porter, is 50 to 70 catties, and he will carry that for 50 *li* a day for days together. The salt-porters, however, perform feats which it would take some of us all our time to rival. We met a gang of these on one occasion at the summit of the Sha Ho Pass, one of the highest points of our journey, and about 8,000 feet above the sea level. Unfortunately, my altitudes are somewhat guesswork, as my aneroid barometer came to grief a week after we had started. As the day was an interesting one altogether, I quote my diary in extenso, and it may convey to you an idea of the style of scenery that occasionally repaid us for hard work and rough accommodation :—

Thursday, 21st February.—Magnificent panorama from our lodging. Descended the mountain by the Pa Ta Kuai Pass and waded across a very cold stream in the valley at the bottom. Then up another steep gradient, round a precipice which gives its name "Kuan Ts'ai Kow" or "coffin-dell" to the valley below, said to be on account of the number of accidents that have happened from the precipice. From the pass at the top we had a fine view of a waterfall on the opposite side of the valley. The sun was hot and delightful, and we sat and basked, as we enjoyed the lovely scenery. The whole place seemed alive with springs of clear water which trickled and leapt down from the precipitous crags on all sides. After a slight descent we had another tremendous pull up a steep gradient, heavily wooded, and found ourselves among a series of wild peaks and crags covered with thick forest, certainly the grandest scenery we have seen yet. We eventually reached the highest point at the Sha Ho Pass, some 8,000 feet above the sea, and bitterly cold. At the rest house there we saw some porters of salt from Ku'ei-fu on the upper Yangtze, in Ssu-ch'üan. They buy salt there at 48 cash a catty, which they carry a distance of some 600 *li* across the mountains, in weights of 120 or 130 catties a man, to the districts beyond Ch'ang-lo-hsien or Shih-nan-fu, where it sells for 120 to 180 cash a catty. They do the journey in about a month in stages of some 20 *li* a day. We stayed for the night at the village of Sha Ho some 6 *li* beyond the pass, passing through a flat-bottomed basin surrounded by precipitous crags which reminded one of an extinct volcano. The road from the pass was perfectly black, or rather the snow which was trodden into it, and on examination we found that we were in some places walking over nearly pure coal. The natives say that the whole mountain is made of coal, and they naturally burn nothing else. They only scratch it up from the surface, and it has the peculiar odour attaching to surface coal, but what we saw burning in the inn was excellent. It was made into balls mixed with mud in the usual way, the balls built into a pyramid on the hearth, and when once set going they will remain red-hot all day and night without being removed. The inn was miserable, we had to pig it out with the coolies and landlord until bed time, and had great difficulty in getting them to clear out of the kitchen then. We slept in the latter, G—— on the mud floor. Distance covered about 50 *li*, very hard going.

These salt coolies were fine hard-looking fellows, and might from their appearance have been inclined to levy some blackmail on us had we not been such a large gang. At the same time, they all wore that sort of hopeless animal expression which is so noticeable in that class of men, and which always produces in one a painful impression. Their career had, in the case of most of them, I imagine, been confined to the mountain roads where we found them, and although they had probably never seen a foreigner before, their stolid expression betrayed not the slightest interest in ourselves or our business. As a rule, we encountered very few travellers on the road, and of those we met, carriers of salt, opium, varnish, vegetable wax, and timber were the most frequent. The three last are, of course, products of the country, and the varnish tree especially is seen everywhere in the neighbourhood of cottages, scored on the bark in a peculiar way that reminds one of the "crimping" of a fish. It is a valuable product, and the tree soon gets exhausted from the demands that are made upon it. The varnish tree attains a height at most of about 20 feet, and in the leafless condition in which we saw it reminded one, in its shape and in the texture of its bark, of the common ash. It is tapped of its varnish by the transverse incisions in its bark which I have just mentioned. The salt and opium are both from Ssu-ch'üan, and bound for Ichang and Hankow or the intermediate places. They are brought over these lonely mountain routes simply to avoid the Likin stations which have to be encountered on the waterway between Chungking and Ichang, and it is a significant fact in connection with the Likin system on the Upper Yangtze that it should pay a man better to bring his opium thirty-five days' journey over the mountains on the backs of porters than to put it on board a boat that will slip down to Ichang in little more than a week.

The timber that is carried down from the mountains is all small, in logs and planks, carried on a wooden frame something like an artist's easel, the upper end curving over the carrier's head, and with a ledge at the bottom on which the logs rest

The country seems to produce no timber of very large size, though much of the forest, judging from its density, the size of the creepers, and the undisturbed state of the decaying timber, must be practically untouched.

The people are hardy and enduring, but are poorly nourished and housed, and incorrigibly lazy. They live almost entirely on maize meal of a poor quality grown in patches on the slopes of the mountains, and only produce enough for their own consumption. Rice is only procurable occasionally, of a red colour, and is expensive. It is grown in the bottoms of the lower valleys where there are facilities for irrigation. We carried all our supplies with us and the difficulty of renewing them, of finding accommodation for ourselves and our coolies, and of carrying money caused constant anxiety and delay. On one occasion we found our exchequer reduced to a few hundred cash, and were forced to wait five days while our men went a distance of 120 *li* to the nearest market, making a return journey of 240 *li* or 80 miles, to change Tls. 15 of silver into copper cash and obtain a goat and a supply of flour. Silver is of no more use than English gold except in a market town. The distances also between the inns were sometimes as much as 40 or 50 *li*, a long day's journey over difficult country. We had to find an inn of considerable size to hold all our party, which numbered some twenty-five persons in all, and bedding had to be found for our porters who, of course, had only the miserable clothes they stood in. Prices were moderate enough. A bowl of maize porridge cost 5 cash, a bowl of soup, with bean-curd and garlic floating about in it, 7 cash, eggs 3 cash each, a night's lodging, including the share of a straw mattress, on the ground, and an enormous quilt, 4 cash. Thus a native could live well for 40 cash a day, and our coolies must have saved, as we had to pay them 210 cash a day a piece, they finding themselves. Our coolies were nearly all Christians, supplied to us by the Mission at Tan Tzu Shan, and, while there were many little points of difference which separated them from their heathen brethren and produced on one a good impression, many of them were lazy and grasping, like some Christians in other classes of society. They seemed, however, happy, contented, kind to one another, and fairly intelligent. Opium smoking and gambling were both strictly forbidden by their rules, and during the seven weeks we were in daily and hourly intercourse with them we never detected either.

We received such kind assistance from the Franciscan Missions who have charge of that part of Hupei and Hunan, besides Shansi and Shang-hsi in the North, and were brought into such frequent contact with their flock that a few words of what we saw of these missions and their work are necessary to a complete sketch of our journey. We stayed on two occasions at the Mission Station of Tan-tzu-shan, in charge of Father B——, whose genuine kindness and hospitality nothing could exceed. Father B—— is a German by birth, was a student at Bonn University and an officer in the German Artillery before he turned Franciscan, and his solitary and devoted life amongst ignorant Chinese mountaineers has not dimmed one whit his interest in the affairs of the day, which he keeps up by reading the newspaper, his perfect polish of manner, or his keen appreciation of a joke. He is in charge of about 800 Christians, most of them of old families and scattered over a large area among the mountains. They are nearly all poor, only a few possessing real and personal property amounting to Tls.1,000 or Tls.2,000, and these are looked upon as people of means and position. All the people round, heathens included, appear to have the greatest respect and affection for the Father, and all alike would greet him with a civil word or a Chinese obeisance as he passed them on the road. At mass on Sundays there would be a congregation on a fine day of 400 to 500 people, some of them coming a distance of 30 *li*, and occasionally a few pagans, attracted by curiosity, would also look in. The chapel was far too small to hold them, and the little courtyard was also filled to overflowing with a kneeling and devout congregation. When we were there the ground was covered with a good foot of snow, and there was yet a congregation of nearly 100 people, many of them old women, for whom it must have been a formidable undertaking to toddle through the snow on their small feet. There is not much superfluous luxury about the life of a Franciscan missionary; he is vowed to poverty, and the circumstances in which he finds himself are certainly conducive to its practice. His house is that of a well-to-do peasant of those parts, which is not high architectural praise, and his food is Chinese.

The other Mission Station we visited was at Szu-ku-shan, the wildest and most desolate place I have ever found myself landed in. The house was also a solitary farm-house on a plateau of mountains some 7,500 feet high. The missionary was a Chinese priest who had been educated in the College at Naples, spoke French and Italian fluently, and was in charge of a scattered parish of some 400 Christians.

It naturally occurs to one to enquire the reason of the existence of these large communities of Christians in the wildest heart of the mountains. Most of their families have been Christians for some generations, and I was told that they are descendants of refugees from the persecutions that took place in the Hukuang Provinces toward the end of the last century, when many natives and Europeans lost their lives. In these mountain fastnesses both priests and people were safe from persecution, and the nucleus formed by a handful of refugees would be gradually augmented by additions from outside. At Tan-tzu-shan, for instance, I found several natives both of Hunan and Sechuan who were comparatively new arrivals, and had been driven to come thither by pressure of hard times and the unpopularity of their religion in their old home. Here they find a congenial soil, metaphorically if not literally, they have the sympathy and support of their co-religionists, and for almost the trouble of clearing the ground they can obtain half the side of a hill with timber and materials for building their cabin, and a patch or two of ground of sufficiently gentle gradient for cultivating a crop of maize. It might be interesting to pursue this subject further, and endeavour to ascertain to what extent religious persecutions in various parts of the Empire have indirectly contributed to colonizing what would otherwise be deserts inhabited by a few banditti and hunters.

I wish it were in my power to convey by description a picture of the scenery we sometimes met with, but words are a poor medium in which to express the grandeur and variety of those mighty forested mountains and gorges. Masses of mountains there were, piled one above another and culminating in scarped and snow covered ridges in the distance. Deep rocky gorges choked with vegetation and fallen masses of rock, with springs and streams of water trickling and rushing down at every turn. Precipitous serrated ridges and pinnacles, absolutely inaccessible except for goats and the most experienced climbers, their summits crowned with a dark mass of what can only be described as "savage" looking forest. Occasionally the mountains would fall away somewhat, and we were delighted to find ourselves in softer scenery that reminded one of Miyanoshita and Hakkone, and the valleys of which in the summer, with rhododendrons in their glory and the forest in full leaf, must be perfect bits of paradise. Water we found everywhere in springs, cascades, and rivulets, which all appeared ultimately to find their way into the Ch'ang-yang river, a stream of considerable size which we crossed at several points of our journey, and which reminded one of a Scotch salmon stream tumbling over a rocky pebbly bottom and as clear as crystal. It joins the muddy Yangtze 30 miles below Ichang, and is navigable for nearly 100 miles up its course by boats carrying 1,000 piculs.

I will not trouble you more with generalities, but in order to fill in the detail of this imperfect picture, which professes to be no more than a sketch, I cannot do better than read you such extracts from my diary as appear likely to be of more general interest.

We started from Ichang on the 19th January, and dropped down the Yangtze by boat as far as I-tu-hsien, thirty miles below Ichang. From here we struck inland in a S.W. direction for the mission station of Tan-tzu-shan, which we reached on the evening of the 21st. The country was rough and wild, but presented no special points of interest. At Tan-tzu-shan we obtained information as to our further route, and as we found that it would be necessary to carry everything with us, we sent into Ichang for further supplies, and decided to pass the week pending their arrival in making an excursion to a mass of mountains called the Pa-shan, to the N.W. We started on the 26th in deep snow, with eleven porters. Constantly descending, we found ourselves the following night at Tu-tsung-wan, formerly a place of some importance owing to transit trade in salt, now a straggling village, but with some remarkably good and solid houses and large shops. The people were very friendly, and we were surprised to come across a Cantonese, agent for a large European firm in Shanghai, who comes up here yearly to buy tea for them. He could speak a few words of English, and was delighted to find Europeans to talk to and show off his accomplishments before his neighbours, amongst whom, indeed, he was almost as much a stranger as ourselves. He gave us a pressing invitation to spend the night with him in his comfortable house, of which we were glad enough to avail ourselves.

On Wednesday, 29th January, we started at 8 a.m., crossing the Ch'ang-yang river by ferry, and following its course up stream. The scenery was lovely, the river clear and rapid over a rocky bed of limestone, steep hills on either side, wooded and rising to a height of 1,000 feet, and the view up the valley, backed by the great mass of the Pa-shan mountain covered with fresh snow, its precipices and rifts showing up in the bright sunshine, and reminding one of Alpine scenery in miniature. We passed the villages of Ya-tzu-k'ou and Marlin, where coal is worked. Apparently it exists in considerable quantities, and, if this is so, a more favourable situation for transport down the Ch'ang-yang river and Yangtze could hardly be selected, as it could be shovelled into cargo boats almost at the pit's mouth. We reached Pa-shan about 5 p.m. It hardly deserved the name of a village, consisting of a few scattered houses at the entrance to a grand gorge of the Ch'ang-yang river, which flows some four miles between sheer precipices of limestone 500 feet in height. We had a letter of introduction from a friendly shopkeeper in Tu-tung-wan to the chief man here, who had a fairly large house, but we met with a very cold reception at first, and were only admitted on sufferance. The old man was evidently anti-foreign in his ideas, as he asked me some searching questions about foreign trade, and whether it was not true that foreigners were drawing all the silver out of China, a startling question coming spontaneously from such a quarter, and significant as indicating one of the true causes perhaps of the anti-foreign feeling in China. I set his mind at rest on this point as well as I could, and relations subsequently warmed, so much so that at the end of our stay he asked us to stop some days longer, and offered to find us dogs, beaters, and anything we wanted.

On Thursday, 30th January, we started with three men over the hills to the N.W. on the left bank of the river. Had a tremendous scramble down the precipices overhanging the gorge. G. nearly got stuck altogether, but managed to crawl up to the top again. The men put up a Shan-yang (wild goat), but we saw nothing. We worked our way home four miles along the face of the precipices on the left bank of the river. The scenery was grand in the extreme, but the road, or rather the track, the worst I have ever had to face, and more or less giddy work. At one place it passed through a fine gallery blasted out of the solid rock. We got home dead beat.

The price of coal at Pa-shan is about 170 cash per picul, and apparently of good quality.

We spent two more days at Pa-shan, during which we beat the country for game in various directions, with very little result, after which we retraced our steps to Tan-tzu-shan, arriving there on the 3rd of February.

Father B. would not hear of our leaving again for several days, so we employed our time in collecting a new gang of porters and laying in a fresh stock of provisions. Finally, on Monday the 10th, the snow, which had been most persistent, stopped, and we succeeded in making a start, amidst a fusillade of crackers and bombs, and with a party numbering with ourselves and our two servants 26 in all, in the direction of Ch'ang-lo-hsien S.W. from Tan-tzu-shan. On Thursday, 13th February, the road, which had so far been at a comparatively low level, began to ascend, the country became more wooded, and at 4-30 p.m. we sighted the walls of Ch'ang-lo-hsien. The town is most picturesque, the walls descending from the mountains on either side, and the gate being at the bottom of the angle so formed, the whole picture backed by enormous snow-covered mountains. On entering the gate one finds oneself on the top of almost a precipice from which one looks down on the town in the valley below, a clear, and rapid stream running through it, the houses white and clean-looking, and the colouring enlivened by the red of a smart looking Yamên and temple. The people were curious, but very civil. We slept in an inn on the other side of the town, on the banks of the river, which was beautifully clear, and brawled and rushed over rocks between high and densely wooded hills like a first-class Scotch salmon stream.

On Friday, the 14th February, we followed the course of the stream up a magnificent gorge, with precipitous wooded mountains on each side, and cliffs and crags overhanging. Not far from Ch'ang-lo-hsien we passed the mouth of a large cave, out of which flows a stream of considerable size and depth, issuing apparently from the bowels of the earth, and mingling its waters immediately with the Ch'ang-lo river. On the face of the rock, at the entrance to the cave, there is cut a conspicuous inscription which I had not time to examine or copy, but I was told that it records the history of two dragons—a large one and a small one—who resided in the cave, and were the terror of the country. They were eventually slain by a man named "Wang," who received for his job the thanks of the officials and Tls. 10,000 from the Provincial Treasury. He still lives in the neighbourhood, at the green old age of ninety. The story was related to me so seriously and circumstantially that I can only record it as I received it, and without comment, the more so as a sceptical remark I ventured to throw out as to the existence of dragons caused me to be looked upon as an ignorant fool.

After leaving the gorge the road became very trying, steep gradients leading up to a pass called Sha-tzu-ya, about 6,000 feet above sea-level, where we were in a dense mist. The last part of our road was lovely, but dreadful going. We missed our road once, and the porters were completely played out. We eventually reached Ho-mao-tung, where there was a solitary inn, accommodation fair, but next to nothing to eat. We were all of us so "baked" that we made up our mind to rest a few days here. The scenery was very grand and savage, the hills like the side of a house, and their ridges covered with dark-looking forest, quite inaccessible in places. The country to the N.E. however was easier, and loafing over the hills by ourselves we saw numerous traces of pig, and the trunks of the trees in some places scored with tusk marks, also a native trap. We subsequently arranged a drive, and several pigs were put up, but owing to the mismanagement of our beaters we saw nothing until late in the afternoon, when we had a shot at a large boar, who however got away from us. It was here also that we saw the golden pheasants, two within easy shot, but with rifles in our hands we had to content ourselves with admiring them at a distance. This country certainly held more game than any we had previously seen, and was fairly practicable. We had already, however, been delayed there longer than we had anticipated through heavy rain and other causes, and as funds were running short we had to push on. We reached our destination, the Mission Station at Szu-ku-shan, on the 21st February, after some hard travelling through lovely wooded scenery. The Mission consists of a lonely farm-house on the top of a high plateau of mountains, enveloped in almost continual mist and bitterly cold. We only saw the sun very occasionally during our stay there, and sometimes could not see a distance of fifty yards. The country is very wild, and the hills are covered with virgin forest, in which great thick creepers like ropes, the holly-leaved oak, rhododendrons, and a sort of birch with delicate bark peeling off like satin and of a rich chocolate colour are conspicuous. We took advantage of a few breaks in the weather to explore the country for game, with the usual encouraging result, and were glad when the return of the men we had sent for cash and supplies enabled us to take the road again.

Our original intention was to have pushed on to Patung on the Yangtse, but after careful enquiry we concluded that we had already passed through the pick of the country, of which the route in Patung would be more or less a repetition, and the result as regards sport had been so discouraging that we determined to strike across to the N.E. direct for Ichang. We left the Mission on the 28th February, with a guide, for Ichang, in a bitterly cold wind and snow. For the first part of our route we travelled in dense fog, and could not see 100 yards in front of us. The road then began to descend rapidly, and we found ourselves below the clouds, and in a fairly cultivated country. Late in the afternoon, on the clouds lifting, we obtained a view of the Szu-ku-shan plateau, where we had been spending the last week, that defies description. It is literally a table land, four square, the corners marked by four great peaks, and its gorges and precipices stood out in magnificent relief amongst the snows. Looking back on this panorama of wild country, it seemed like an enchanted land standing isolated among the clouds, and, even knowing it as we did, aroused in us anew all the curious feelings suggested by an unknown and mysterious land. One could imagine that it contained anything and everything curious, from dragons to wild men, instead of being the empty wilderness that it is. The last 15 *li* of our route was a steep descent to the valley of the Ch'ang-yang River, here an unnavigable mountain torrent flowing between precipices 1,500 feet high. We found the inn closed on which we had counted for accommodation, and we had to make for the river bank, where there was a ferry communicating with the little village of Szu-pan-ch'i perched up on the face of the precipice opposite. It was quite dark, all hands were tired out, and we shouted ourselves hoarse before the ferry man would condescend to come across the river for us. At last, however, we were all housed in a good inn consisting of one large room combining kitchen and everything else. The proprietor was a sporting-looking fellow with an intelligent soldier-like face on him, and a leopard-skin coat. The people very civil, although they had never seen an European in his own costume before. Musk-deer are found among the cliffs here, and the landlord showed me some grains of musk carefully done up in paper like a seidlitz powder, and gave me a dissertation on its wonderful medicinal properties. It sells here for about 400 cash a candareen, or say £6 sterling an ounce.

Continually descending after leaving Szu-panch'i we found ourselves on the afternoon of the 5th March on the main road from Ssuchuan, the first time during our journey that we struck the high road. The traffic, especially of opium, was considerable, and the road a treat after what we had been through. We slept at Ho-chia-p'ing in a first-rate and very large inn. The climate was distinctly warmer.

On the 6th March we made an early start, and following the high road, which was lively with traffic, descended into the narrow gorge of a mountain stream. The road at one point passed for one hundred yards or so under a covered way, one side open to the stream and supported by substantial wooden pillars, the other consisting of extremely well-to-do shops, reminding one strongly of the "Rows" at Chester. The whole block, isolated, and, so to speak, *à propos* of nothing, for there were no other houses in sight, was well-built, and the effect amongst the surrounding scenery was very pretty. The *raison d'être* of these shops was evidently the transit trade in Szu-ch'üan produce, of which they got their pick before it reached the Ichang market, selling their European goods in exchange.

Just below this the stream is crossed by a handsome one-arched stone bridge, quite new, and then the valley opens out somewhat into pretty river scenery of wooded hills, rocks, rapids, bamboos, and grass, with frequent villages.

The 7th March was our last day into Ichang, which we reached in the afternoon, crossing the Yangtze just above the city, and we soon forgot the hardships of our journey in a warm welcome from our European friends, a clean change, newspapers, and luxury.

BOOK NOTICES.

Aperçu des Travaux Géographiques en Russie. Par le Baron Nikolas Kaulbars. St. Petersburg, 1889. 8vo. 292pp.

The work of the Russians in the geographical service is so little known that the review of Baron Kaulbars is very welcome. In Central Asia, about the Aral Sea, the Kirghis Steppes and Turkistan, Turkomania, the Amu Daria, China, Khiva, Bokhara, and Afghanistan, in Persia, Asia Minor, Bulgaria, Montenegro, in Egypt, Arabia, Norway, America, Japan, and Australia, the Russians, since the time of "Ivan the Terrible," have been engaged in surveying and map-making. War and peace have alike rendered help to the work done by Russia, and this comprehensive review brings to the mind a conviction of the great scientific work which has been quietly, in the midst of great conflict, been always going on. The paper was read at the International Congress of Geography at Paris, and is now printed in full. It is an admirable summary, and will be a surprise to those who have not had the pleasure of reading Mr. Delmar Morgan's papers on Russian work.

The Minerva Library. Ward, Lock and Co. Maps and illustrations. 2s. each. European Travels. Beckford.—Travels on the Amazon. Wallace.—South Africa and Vacation Town. Galton.—Bible in Spain, and Adventures. Borrow.—Voyage Round the World. Darwin.—Coral Reefs and Volcanic Islands. Darwin.—Travels in North and Central Africa. Barth.—Travels in Timbuktu and the Soudan. Barth.—Modern Egyptians. Lane.

These reprints of famous travel books are edited by Mr. G. E. Bettany, M.A., and, where needful, chapters or notes are added in completion or elucidation of the text. The books are handy in size and well done. We hope to see the series continued, and are glad to add them to the Library.

TRANSLATION OF MEMORIAL FROM LI HUNG CHANG TO THE THRONE, ON THE FLOODS IN CHIHLI.

4th August, 1890.

A memorial from Li Hung Chang, representing that an abnormal quantity of rain having fallen in Tienstin and its neighbourhood, severe floods have occurred, and that steps are now being taken to raise subscriptions and divert a sum of money from the public funds to relieve the pressing necessities of the people.

In the Province of Chihli, in the latter part of the summer, the rains arrived later than usual. Then several downpours of rain occurred, the land was soaked to repletion, and every hope of a good harvest was entertained.. From the 21st day of the 5th month a season of incessant rain commenced, and little by little the water rose. The low-lying plains became flooded, and the embankments of all the rivers began to develop weak spots. The memorialist issued repeated instructions that some method should be adopted to relieve the pressure of accumulated flood water and that the most earnest efforts should be directed to arrest the destruction of the river embankments.

It happened, however, that, contrary to all calculation, there was, from the 29th day of the 5th month until the 6th of the 6th month, an incessant storm of strong wind and heavy rain. The mountain torrents overflowed and rushed into the levels below as if falling off a roof. All the rivers became flooded, and topped their embankments with terrific waves. The two banks of the Yung-ting river, the Peiho and Grand Canal, the Ta Ch'ing river, and the "thousand *li* embankment," in the "Jen-Ch'iu" district were broken through in numerous places. On each side for hundreds of *li* there is now one unbroken sea. In the plains there is water to the depth of twenty feet or more, and the homesteads and fields of the peasantry are all usurped by the powers of water. The loss of life by drowning to human beings and cattle is enormous, and wherever the eye rests the autumn crops have all been carried away by the floods. Such a calamity has been unknown for scores of years.

Tientsin forms the outlet for nine rivers, and the level of the country is naturally low. Add to this the effect of an east wind in raising a sea, and of a tide in forcing back the water, the difficulty of draining the flooded districts will be apparent. The military camps and the various arsenals outside the city are all hemmed in by a vast flood; official Yamêns and private houses have fallen down in numbers. The post roads are all interrupted, the different telegraph lines have in many places been washed away, and communication of every description is at a standstill. The condition of affairs in the various official districts to the south-west of the Provincial Capital (Pao-ting Fu) the memorialist has as yet no means of ascertaining, so that the present description applies only to the immediate neighbourhood of Tientsin. The cottages of the peasantry are in most cases constructed of mud, and the action of long-continued rain reduces them to a sodden and extremely unsafe condition. When once they are reached by the waves of the flood, walls and buildings collapse in helpless ruin. The poor peasantry either take refuge in the trees and shout for boats to save them, or cast around in vain for a dry spot to which to move their families; distracted by the suddenness of their calamity, afflicted with suffering of every kind, the mind can scarcely bear to contemplate the painfulness of their condition.

The autumn season is now close upon us, and should the clouds roll away and blue skies appear, it would still be possible, so soon as the floods had sufficiently fallen, to sow at least buckwheat and such grains in place of the crops destroyed. At the present moment, however, the clouds are as thick as ever, and the atmosphere is still charged with rain. Should the incessant downpour continue it will be increasingly difficult to decide what measures to take. The starving peasantry, unable to make a living, are coming to Tientsin in search of food, and it is necessary that immediate steps should be taken to relieve the pressure of distress by temporarily assisting the sufferers at our doors. The memorialist, together with the other provincial officials, are using every effort to encourage subscriptions, and are earnestly urging the gentry and merchants to collect funds for distribution in charity, to increase the number of refuges, and to distribute rations of bread and congee in order to preserve the lives of the sufferers. The fact is, however, that the continually recurring years of flood and famine have already exhausted the springs of charity, and the Province of Chihli is besides a country of but limited resources, where it is difficult to command a large sum of money. The provision, however, of the necessary funds cannot be delayed for a moment, and some means must positively be decided upon to collect them. The Provincial Treasurer has already been instructed to provide Tls.30,000, the Salt Treasury, Tls.20,000, the Pao-ting Fu Militia chest, Tls.10,000, and chosen and trustworthy officers have been despatched to those districts which have suffered more severely from the floods, to combine with the local officials in investigating and honestly relieving with money the most pressing distress.

The memorialist has instructed the officials of the various flooded districts to examine and report to him on the amount of damage or distress caused in each, and proposes in due course to collate the reports into a memorial to the throne. He is also awaiting the report of the intendant of the Yung-ting river as to the exact circumstances of the breach there, in order to address a special memorial to the throne impeaching that official.

IMPERIAL RESCRIPT RECEIVED.

Noted. Let the Tls.60,000 be handed at once by the memorialist to his officers, with instructions for its honest and prompt distribution, and let the circumstances of the breach in the Yung-ting river, and the extent of the damage and distress caused in the different official districts, be speedily investigated, and embodied in a memorial to the throne.

BOOK NOTICES.

The World's Great Explorers. G. Philip and Son, London. About 300pp., with a large number of maps, illustrations, and indexes. 4s. 6d. each.—Joseph Thomson: Mungo Park. F. N. N. Guillemard: Ferdinand Magellan.

The volumes of this series are being added to. The books are very well done and are of very great value. They are just the books young people will devour, and old ones might do a great deal worse than spend some time over them. For prizes and for school libraries there can be nothing more admirable. The maps with Park are interesting and valuable, and if space permitted long extracts would be appreciated. We are glad to find them added to the Library.

PROCEEDINGS OF THE SOCIETY.

OCTOBER 1st TO DECEMBER 31st, 1890.

HUNDRED AND THIRTY-SIXTH MEETING

Of the Society, held in the Memorial Hall, Wednesday, October 1st, 1890, at 7-30 p.m. The Rev. S. A. **Steinthal** in the chair.

Miss H. E. **Colenso** addressed the members on "Zululand" (see page 157). The address was illustrated with photographs and large maps, and was listened to with very great attention.

Mr. S. **Ogden**, J.P., moved a very hearty vote of thanks to Miss Colenso for her paper, which was seconded by Mr. J. **Dilworth Harrison**, supported by the **Secretary**, and carried with acclamation. Miss **Colenso** responded, and a vote of thanks to the Chairman closed the meeting.

HUNDRED AND THIRTY-SEVENTH MEETING

Of the Society, held in the Library, Wednesday, October 8, at 7-30 p.m. Mr. **Wm. Aldred**, F.C.A., in the chair.

A large number of presentations were announced and the election of the following members reported:—

Ordinary: Rev. A. Maclaren, D.D., Rev. John Quine; Messrs. W. A. Child, Neville Clegg, J. A. Morris, J. A. Walker, and Wm. Williamson.

Associate: Mr. J. W. Watkinson.

The following papers were read: "Nile Discovery," by Mr. J. Howard Reed (see page 345); "Notes on Armenia," by Mr. J. Theodore Bent (see page 220); "Teaching of Geography in Russian Schools," by Dr. H. R. Mill, of Heriot College (see page 239); "New Trade Routes in Persia," by Mr. H. F. B. Lynch (see page 223); Report of the Delegate to British Association (see page 261); "The Atlantides" by Professor Borsari; "Borate of Lime Deposits," by Mr. A. Rowbottom; "Note on Heligoland" (see page 154). Correspondence was read from His Excellency Governor Moloney, of Lagos, and Mr. R. E. Dennett of the Congo.

Several questions were replied to, and some discussion ensued on the various papers. Votes of thanks, moved by Mr. T. **Gregory**, seconded by Mr. C. **Wadsworth**, closed the meeting.

HUNDRED AND THIRTY-EIGHTH MEETING,

Held in the Mayor's Parlour, Rochdale Town Hall, on Thursday, October 16, 1890, at 3 p.m., on the invitation of His **Worship** the **Mayor**, who presided.

The Rev. S. A. Steinthal, Messrs. Irlam, Phillips, Snaddon, and the Secretary attended the meeting as a deputation from the Society, and in their addresses referred to the history and work of the Society, and the great importance to a commercial community of an efficient Society of this kind.

Thanks were given to His Worship the Mayor, and some members were added to the Society.

HUNDRED AND THIRTY-NINTH MEETING

Of the Society, in the Memorial Hall, Wednesday, Nov. 5th, 1890, at 7-30 p.m. Mr. Councillor F. SMALLMAN in the chair.

Mr. GUSTAV JACOBY addressed the members on "British Trade with Algeria, Tunis, and the Sahara" (see page 269). The address was illustrated by a large map of North Africa prepared by the Victorians.

Mr. F. ZIMMERN addressed the members on "A Month in the district of St. Gall, Switzerland." A cow-bell, some maps, photographs, and some curious prints were exhibited to illustrate the address.

Capt. Marley sent for the inspection of the members a collection of photographs of India, New Zealand, &c.

The SECRETARY gave a short description of a journey across Sweden through the Gota Canal, illustrated by maps, photographs, models, dresses, &c.

Letters were read from the Rev. W. C. Porter, Newala (see page 287), describing the condition of a part of East Africa and the effect of the German occupation; Mr. R. E. Dennett on Congo matters; the Berne Geographical Society in reference to the Congress next August, and the "Camille Douls" Committee for the erection of a statue to his memory.

Votes of thanks to the readers of the papers and to the Chairman were very heartily given and responded to, and the meeting closed.

HUNDRED AND FORTIETH MEETING

Of the Society, held in the Mayor's Parlour, Town Hall, Manchester, by the permission of His Worship the Mayor of Manchester, Friday, November 21st, 1890, at 3 p.m. The meeting was called to hear addresses and to confer on the present condition of Nyasaland (see page 287). The Right Rev. the LORD BISHOP OF MANCHESTER in the chair.

Letters from Consul H. H. Johnston and Rev. W. C. Porter were read.

The Venerable ARCHDEACON MAPLES, from Likoma, the Rev. D. KERR CROSS, M.B., G.M. of the Free Church of Scotland Mission on Nyasa, and Mr. J. W. MOIR, of the African Lakes Company, addressed the meeting. Large maps of Nyasaland were hung to illustrate the address.

Mr. J. A. BEITH, J.P., moved and Mr. S. L. KEYMER seconded a very hearty vote of thanks to the gentlemen who had addressed them on the question with so much interest and ability. The resolution was carried and responded to. A very hearty vote of thanks was given to the Mayor for the use of the Parlour, and to his Lordship, the Bishop, for presiding. The BISHOP responded.

HUNDRED AND FORTY-FIRST MEETING

Of the Society, held in the Memorial Hall, on Friday, November 21st, 1890, at 7-30 p.m.; the Rev. S. A. Steinthal and members of the Council received the members, and there was a large attendance.

A number of maps, atlases, books, and curiosities, which had been presented to or purchased by the Society, were exhibited. A number of photographic views of Nyasaland were shown in the lantern and were explained by the Venerable ARCHDEACON MAPLES. The Rev. Dr. Cross and Mr. J. W. MOIR also addressed the meeting.

Music and refreshments were provided and the members had an opportunity of interviewing these distinguished visitors.

Very hearty thanks were given to the visitors for their addresses, to the Victorians for the music, and to the Chairman. The **Chairman** responded.

HUNDRED AND FORTY-SECOND MEETING

Of the Society, held in the Large Hall of the Schiller-Anstalt, Nelson Street, Monday, November 24th, 1890, at 7-30 p.m. Mr. F. **Zimmern** in the chair.

Mr. M. **Stirrup**, F.G.S., addressed the members on "Water Sculpture of the Earth," (see page 364), illustrating the address with large maps of the Cevennes district and by lantern views. These views were nearly all new, and had not been previously exhibited here.

The thanks of the members were heartily given, on the motion of the Rev. S. A. **Steinthal**, seconded by Mr. **Hermann Woolley**.

Votes of thanks to the Committee of the Schiller for the use of the room, and to the Chairman, having been replied to, the meeting closed.

HUNDRED AND FORTY-THIRD MEETING

Of the Society, held in the Memorial Hall, Wednesday, December 3rd, 1890, at 7-30 p.m. The Rev. T. **Corbishley** in the chair.

The Rev. L. C. **Casartelli**, M.A., Ph.D., had prepared a "Brief Note on Manchester Rainfall" (see page 77), which was illustrated by a large map prepared by the Victorians.

The **Secretary** read a short note on the work of Mr. Clement Wragge, in organising the Government Meteorological Department of Queensland, and exhibited a large number of specimens of his work. (See page 182.)

Mr. I. W. **Thompson** addressed the members on "Los Angeles and Southern California." (See page 297.) Some Californian views and pamphlets were exhibited. A large number of questions were asked Mr. Thompson and replied to.

Thanks were duly and heartily given to the lecturers and to the chairman, which being responded to closed a profitable and valuable meeting.

HUNDRED AND FORTY-FOURTH MEETING

Of the Society, held at the Pendleton Town Hall (by permission of the Pendleton Committee of the Salford Corporation), on Wednesday, December 17th, 1890, at 7-30 p.m.

His Worship the **Mayor of Salford**, a vice-president of the Society, received the members, and at eight o'clock introduced Mr. E. W. **Mellor**, of Bury, who addressed the Society on "Normandy" (see page 304), illustrating his address with a fine series of photographs taken by himself and shown in his lantern, which was very powerful, and the pictures were very remarkable for their clearness and beauty.

The **Mayor of Rochdale** moved, Mr. J. B. **Reyner**, J.P., Stalybridge, seconded, and Councillor **Stephens** supported a very hearty vote of thanks to Mr. Mellor for his address. The motion was carried with applause.

The thanks of the meeting were very heartily given to the Pendleton Committee of the Corporation for the use of the rooms, to His Worship the Mayor for presiding, and to the committee of Pendleton members who had arranged the details of the reception. Music and refreshments were provided, and one of the most interesting meetings closed at a late hour.

ONE HUNDRED AND FORTY-FIFTH MEETING

Of the Society, held in the Library, Friday, December 19th, 1890, at 7-30 p.m., Rev. L. C. CASARTELLI, M.A., Ph.D., in the chair.

The minutes of the following meetings were read and approved: October 8th (137), 16th (138), November 5th (139), 21st (140-141), 24th (142), December 3rd (143), Dec. 17th (144). The presentations to the Society's Library and the election of the following members for 1891 were announced:—

ORDINARY: Messrs. Samuel Barlow, J.P., G. G. Campion, Cephas Duckworth, Anyon Duxbury, Hugh Fleming, Stewart Garnett, J.P., Isaac Gleave, J. Hart Gordon, Alderman J. R. Heape, F. J. Jackson, W. Jackson (in lieu of Associate), A. E. Lejeune, James T. Lightwood, James Makin, H. H. Mellalieu, J.P., R. C. Phillips, J. B. Reyner, J.P., R. W. Shaw, Thomas Stansfield, Henry Swindells, E. Timperlake.

ASSOCIATES: Messrs. J. McAdam, Harold Berry, S. Cohen, J. W. Hurrell, R. Woods.

Correspondence was read from the following: H.E. Governor Moloney, Lagos; Mr. R. E. Dennett, Banana; Mr. Theodore Bent, Mashonaland.

The CHAIRMAN read a paper by Mr. E. Guy Hillier, on "A Mountain District of Central China" (see page 370), the address being illustrated with a map and a large collection of beautiful photographs.

The Rev. L. C. CASARTELLI also read a translation of "Memorial from Li Hung Chang to the Throne, on the Floods in Chihli." (See page 379.)

A short note by the Rev. F. GALPIN on His Excellency Li Hung Chang was read. (See page 35.)

A large and interesting collection of photographs from Corea, by Mr. Walter C. HILLIER (H.M. Consul-General at Seoul), was exhibited.

A report of the delegate to the meeting of the Aborigines' Protection Society was read by Mr. R. C. PHILLIPS.

Votes of thanks closed a most interesting meeting.

HUNDRED AND FORTY-SIXTH MEETING

Of the Society, at the Cotton Waste Exchange, Saturday, December 27th, 1890, at 6 p.m.

The Victorians invited the children of the members to a meeting at which geographical lantern exhibitions and other diversions were given. About 200 children took part in the meeting, which was thoroughly enjoyed.

Thanks were heartily given to all those who had taken part in the preparation and carrying out of the proceedings, and the meeting closed about ten o'clock.

THE REPORT OF THE SECRETARY OF THE SOCIETY TO THE COUNCIL FOR THE YEAR 1890.

My Lords, Ladies, and Gentlemen,—It affords me much pleasure to report to you the continued prosperity of the Society for the year 1890, both in the accession of members and in the increased usefulness of the Society.

The debt which has hampered the Society for several years is now so nearly cleared off that we may shortly hope to see it extinguished altogether.

If our membership could be so strengthened as to enable us to have decent premises and to strengthen the staff of the office, good as the work we have done may have been, we could do very much better, and could begin to realise the hope of the founders of the Society.

We have to thank a large number of ladies and gentlemen for the admirable addresses they have given to us and have allowed us to reproduce.

Addresses in Geography, History, Zoology, Botany, Biology, Anthropology, Commercial Education in its relation to Geography, Travels, Local Geography, and upon Sciences related to Geography have been delivered.

With great generosity these addresses have been given to us, and of the fifty (or thereabouts) there are few which do not reach a very high standard of excellence for their scientific, commercial, and literary value.

The following list comprises those only which have been printed in our Journal, but, in addition, we have had at the Library meetings many oral communications of great value which we are not able to reproduce.

EDUCATIONAL.

On the Necessity of Thorough Teaching in General Geography as a Preliminary to the Teaching of Commercial Geography. Mr. H. J. Mackinder, M.A.

On the Teaching of Geography in Russia. Dr. H. R. Mill, D.Sc., F.R.S.E.

The Report to the Council on Geographical Education, with proposals for prizes and certificates for an examination in the Geography of Lancashire and Cheshire by the children of primary schools of the Seventh Standard and upwards.

GENERAL.

On the Present State of the Ordnance Survey, and the paramount necessity of a thorough revision. Mr. H. T. Crook, C.E.

Report of Delegate to the British Association Meeting at Leeds in 1890.

Earth Sculpture by Water. Map. Mr. M. Stirrup, F.G.S.

Caucasian Photographs.

COMMERCIAL GEOGRAPHY.

The Negotiations of Duke Frederick III. of Holstein-Gottorp with Russia and Persia concerning the scheme for bringing the Persian Trade through Holstein-Gottorp, A.D. 1633-1640.

British Trade with North Africa. Mr. G. Jacoby.

The Trade of Morocco.

LOCAL GEOGRAPHY.

A Preston Ward's Geography, History and State. Councillor Harding.

Description of a Contour Map of Huddersfield and District. Mr. F. D. King.

The Rhins of Galloway: A Note and Comparison. Mr. W. G. Black, F.R.C.S.E., F.R.M.S.

METEOROLOGY.

Notes on the Manchester Rainfall during the twelve years 1878 to 1889. Map. Rev. L. C. Casartelli, M.A., Ph.D.

Queensland Meteorology and Mr. C. Wragge.

BIOGRAPHICAL.

His Excellency Li Hung Chang. Portrait. Rev. F. Galpin.

M. Camille Douls.

Dr. L. Wolf.

EUROPE.

"Unknown France." The Hydrology of the Causses of Languedoc, &c.: A Chapter on Denudation and the Régime of Underground Waters. Map. Mr. Mark Stirrup, F.G.S.

Normandy: History and Geography. Mr. E. W. Mellor.

ASIA.

The Forests of Abkhasia. Map and Illustrations. Mr. Douglas W. Freshfield, Hon. Sec. R.G.S.

On the Opening of the Yangtse-Kiang River to Navigation.

The Sulphur Springs of Formosa. Illustration. Mr. J. Rippon.

Notes on the Armenians in Asia Minor. Mr. J. T. Bent, F.R.G.S.

New Trade Routes into Persia. Mr. H. F. B. Lynch.

Pievtsoff's Expedition in Central Asia

Prince Henry of Orleans and M. Bonvalot's Journey through Central Asia.

AFRICA.

The Fjort: The Manners and Customs of the Native Congo People. Mr. R. E. Dennett.

The Island of San Thomé and the West Coast of Africa. Mr. J. Rippon.

The Transvaal: History, Geography, Minerals, and Progress. Portrait and Map. Mr. W. Y. Campbell.

The Stanley Reception. Speeches of Mr. Stanley in Manchester and of Dr. Parke at Newcastle.

The Lakes of East Central Africa: The Map Development. Maps. Mr. J. H. Reed.

The Mediterranean: Physical and Historical. Map. Lieut.-Col. Sir R. Lambert Playfair, K.C.M.G.

Nyasaland and British Exploration. The Ven. Archdeacon Maples, Rev. Dr. Kerr Cross, Mr. J. M. Moir, and the Lord Bishop of Manchester.

Zululand: Its Geography and History. Map. Miss Colenso.

The Nile: History of Discovery and Cartography. Maps. Mr. J. H. Reed.

The Cameroons Region. Exploration by Dr. Zintgraff.

Mount Ruwenzori (Mountains of the Moon).

NORTH AMERICA.

Stone Monuments in North-Western Iowa and South-Western Minnesota. Mr. T. H. Lewis.

Los Angeles and Southern California. Mr. I. W. Thompson.

SOUTH AMERICA.

On the Opening of the Upper Amazonian Regions as a Field for English Enterprise.

An Expedition to the Upper Amazon.

AUSTRALASIA AND OCEANIA.

Rossel Island: A Cannibal Island. Mr. Basil Thomson.

British New Guinea: Its Geography, and the Manners and Customs of the Natives. Mr. W. D. Pitcairn, F.R.G.S.

Notes of the Recent Development, Explorations, and Commercial Geography of North Borneo. Mr. A. Cook.

Sir W. Macgregor's Ascent of Mount Victoria and Explorations of the Owen Stanley Range. Mr. J. P. Thomson, F.R.S.G.S.

The Island of Kadavu. Mr. J. P. Thomson, F.R.S.G.S.

In addition to these formal papers we have had during the year a large number of communications from China, the Gold Coast, the Congo, South Africa, North Africa, the Red Sea, North America, France, Switzerland, and other places, and the colonies of the Empire, on matters of interest and of commercial importance.

The work of this department of the Society must in time become greatly enlarged, and it will tend to the increase of knowledge and goodwill of those whose duty it may be to conduct it, although a large part of it may not be available for the general use of the Society.

The useful work of the "Victorians," who have addressed many meetings for the Society with great advantage to those who have heard them, is dealt with in the separate report of their Hon. Secretary, Mr. C. W. Grindley.

These young men are laying the Society under a deep debt of obligation by giving unrequited labour. They are enabled to do their work more efficiently in consequence of our excellent lantern and the large collection of slides we have been able to form already, and they have shown their disinterestedness during the season by reducing somewhat the cost of the lantern apparatus.

The exhibition of Geographical appliances itself, open for six weeks, and the masterly addresses given on the subject, and the examination by the Society of the condition of the teaching of Geography in the locality, are now producing the desired result in more efficient Geographical teaching. Besides these more public uses of the Society, the valuable Library, and the increasing number of applications for information and advice from the officials of the Society, is very encouraging.

The increase of the Library is very remarkable. A few additions have been made by purchase—not so many as we ought to have had, if funds would have allowed. But from publishers, private persons not connected with the Society, from corresponding societies and institutions, from foreign governments, and from some departments of Her Majesty's Government, we have gratefully received curiosities, books, maps, atlases, diagrams, pictures, portraits, until our shelves are overloaded, and we have material we cannot use to the utmost profit for the want of proper accommodation.

A large collection of lantern slides has been added to the Library, and we have now a capital lantern, which has been used in the past season with great appreciation. The "Victorians" have done most effective work in the Photographic department. Photographing, making lantern slides, having charge of the lantern, and acting as demonstrators in the meetings of the Society, all has been done so ungrudgingly and continuously that this part of their work merits special approbation.

We should have been glad to find Professors of Geography appointed at Owens College, Liverpool College, and the Yorkshire College. We were very glad to note that evening lectures were to be given at Owens College on Commercial History and Geography, that Commercial Geography is taking its place in the evening schools, at the technical schools, and in the scheme of the Chamber of Commerce. The present and pressing need is for competent teachers of Commercial Geography, and they are difficult to find, and will only be produced slowly. If the teaching is taken up as a mere duty, it will be mere taskwork, and the teaching will fail; but if, in addition to the requisite knowledge, there is sustaining enthusiasm in the teacher, the subject will become of great interest and value both to teacher and pupils. To the missionary of every creed the Society sends help in many ways, to the commercial man it opens up avenues of knowledge in relation to his special subject which he can hardly obtain elsewhere, to the educationist it gives encouragement and tools of considerable value, and to the historian and scientist it is of inestimable value. There is learning for the learned, and for the unlearned there are numerous practical lessons on Home and Foreign Geography which arouse interest, leave happy impressions for the future, and help to make a fuller and more complete life.—I beg to remain, yours respectfully,

Eli Sowerbutts, Secretary.

Obituary.

The Society has suffered, during the year, very heavy losses by the death of some of its most important members, some of whom have given a good deal of service to the Society, and all of whom were in hearty accord with its objects. Their places will be difficult to fill again, and it is with great regard to their memory and sympathy for the loss that we record some of their names. They are:—

Mr. Daniel Adamson, J.P.,
Miss Lydia Becker,
Mr. G. B. Blair,
Mr. Thos. Bostock,
Mr. J. W. Edwards,
Mr. F. W. Grafton, J.P.,
Mr. J. F. Hutton, J.P.
Mr. J. Clarkson Johnson,
Mr. Alfred E. Longdon,
The Very Rev. Dean Oakley,
Councillor McFarlane,
and others.

REPORT OF THE "VICTORIANS" TO THE COUNCIL OF THE SOCIETY ON THEIR WORK.

MY LORDS, LADIES, AND GENTLEMEN,—It is now over four years ago since the "Victorians" were called into being. The purpose set before them was the performance of practical work in Geography; and commencing with a series of thirteen maps for the Jubilee Exhibition they have followed up this purpose with as much zeal as perhaps was practically possible, considering the claims their daily labour made upon them.

Last year the work of lecturing was taken up, on the suggestion and under the leadership of Mr. Sowerbutts, with great vigour, over twenty lectures and addresses being given during a period of seven months.

The following have been delivered: Six for the Working Men's Clubs Association, on "The Stanley Expedition for the Relief of Emin Pasha," illustrated with lantern views; one for the Home Reading Union, on "The Mediterranean: A Study in Comparative Geography," illustrated with a series of maps specially drawn for the lecture; two for the Leigh Literary Society, on "Commercial Geography" and "Across Africa with Stanley," with maps, diagrams, and lantern views; one for the Oldham Corporation, in the Public Free Library, on "Stanley's Latest Expedition," with lantern views; one to the members of the Shaw (Oldham) Literary Institute, on "Polar Exploration," with lantern views; and the remainder for societies in Manchester and neighbourhood, chiefly at the request of our members, on "Stanley's Expeditions," "The Nile and its Heroes," "The Congo," "Polar Exploration," "The Romance of Geography," "South America," "India," and others relating to mission work in the "Dark Continent."

Addresses have also been given to the children of several Sunday Schools, of different denominations, on subjects having a relation to Geography and Missions.

Lantern views, maps, diagrams, and curios have been freely used to give interest to the subjects.

In all places the lectures and addresses have been received with keen appreciation by large and oftentimes crowded audiences.

In addition to this work the "Victorians" have given two lantern entertainments for the Practical and Recreative Evening Classes Association and one for the Adelphi (Salford) Lads' Club; also lantern and musical entertainments to the inmates of the Manchester Workhouse at Crumpsall; to the children of members belonging to the Geographical Society; and to the children of the Deaf and Dumb Schools, Old Trafford.

Several friends gave their valued assistance in the musical part of the entertainments, and to these the "Victorians" tender their warmest thanks.

This slight sketch of the work done during the past winter session (which does not include the ordinary work of preparing maps, making analyses of journals, &c.) shows that this section of the Manchester Geographical Society is trying to do something, not only for the Society itself, but also towards furthering the intellectual life of the community.

CHAS. W. GRINDLEY, Hon. Sec. to the "Victorians."

REVENUE ACCOUNT,

January 1st to December 31st, 1890.

Dr.	£	s.	d.	£	s.	d.
To Balance from 1889				4	15	10
,, Members' Subscriptions—						
,, 479 Ordinary	489	16	6			
,, 200 Associate	105	0	0			
,, 1 Society	2	2	0			
				596	18	6
,, Bank Interest				1	3	7
				£602	17	11

Cr.	£	s.	d.	£	s.	d.
By Expenses of Meetings ..				160	18	10
,, Journal, April, 1889, to June, 1890				245	18	6
,, Rent, Rates, Taxes, Gas, &c.				50	16	3
,, Books, Maps, Binding, and Shelves for Library				32	5	5
,, Advertising	6	12	7			
,, Sundry Expenses, Coal, Stationery, Cleaning Offices, Postage, Carriage, Telegrams	94	8	7			
				101	1	2
,, Balance as per General Balance Account				11	17	9
				£602	17	11

GENERAL BALANCE ACCOUNT,

December 31st, 1890.

Assets.				£	s.	d.	£	s.	d.
To Arrears of Members' Subscriptions..............							257	5	0
,, Stock of Journals........							52	15	0
,, Lantern Account :—									
Cost				22	7	10			
Less received				2	5	9			
							20	2	1
,, Amounts charged on Account of 1891 :—									
Journal..............				19	15	6			
Library..............				12	12	0			
New Members........				15	0	0			
							47	7	6
,, Cash in hand, Treasurer..				18	10	9			
,, ,, Secretary..				35	16	8			
							54	7	5
,, Balance of Deficiency Account, Jan. 1st				85	7	8			
,, Less Donations ..	6	1	0						
,, Stanley Meeting Surplus..	36	13	9						
,, Balance of Revenue a/c..	11	17	9						
				54	12	6			
							30	15	2
							£462	12	2

Liabilities.	£	s.	d.
By Eleven Life Membership Subscriptions in Reserve....	115	10	0
,, Accounts Sundry owing	347	2	2
	£462	12	2

Audited and found correct,

(Signed) THEODORE GREGORY, F.C.A., } Auditors.
WILLIAM ALDRED, F.C.A.,

June 24th, 1891.

LIST OF JOURNALS, MAPS, ATLASES, &c.,

ACQUIRED BY THE SOCIETY FROM 1885 TO 1890, NOW IN THE LIBRARY,

With an indication of some of the principal papers in the Journals for 1889 and 1890.

⁂ Only the most important articles have been indicated from the Journals of Corresponding Societies. A very large number of smaller articles of great interest will be found on reference to the books themselves.

CORRESPONDING SOCIETIES IN GREAT BRITAIN.

Edinburgh. The Scottish Geographical Magazine. Vols. I., 1885, to VI., 1890 (No. 11, 1890, missing).—1889: (1) History of Telegraphic Communication with India, by Gen. Sir R. M. Smith. District of Chiengmai, Siam, by W. J. Archer. Inland Ice of Greenland, by H. Rink.—(2) The Andamans and Andamanese, by Col. T. Cadell. The Transvaal, by S. P. Ford. The Philippine Islands, by W. A. Taylor.—(3) Islands of Melanesia, by R. H. Codrington. Dr. Livingstone and Lake Bangweolo, by E. G. Ravenstein (map). Earthquake Shocks in Edinburgh District, by R. Richardson (map).—(4) Explorations in the Atlas, by Joseph Thomson.—(5) Letter from H. M. Stanley (map). Samoa, by G. A. Turner (map). The Portuguese in Nyassaland, by J. Batalha-Reis.—(6) South American Rainfall, by W. B. Tripp (map). Scientific Earth Knowledge as an Aid to Commerce, by H. R. Mill.—(6, 9, 11) The Cocos-Keeling Islands, by H. B. Gruppy (map).—(7) Astronomical Observations from Quillimane to North Nyassa by, H. E. O'Neill. Geography of the Caucasus, by V. Dingelstedt. Examination Scheme of R.S.G.S. (map).—(8) Across Greenland, by Dr. F. Nansen (portrait and map). Marine Deposits, by J. Murray (map).—(9) Zambesi Delta, by D. J. Rankin. (10) The East of New Guinea, by Basil Thomson. The Present and Future of Queensland, by C. Lumholtz.—(11) Temperature of Tidal Estuaries of S.E. England, by H. C. Sorby.—(12) South Coast of Western Java, by H. B. Guppy. Island of Kadava, by J. P. Thomson.—1890 : (1) Africa : Spheres of Influence, by Gen. Sir L. Pelly. Letter from H. M. Stanley. Kara Sea and Route to North Pole, by Capt. A. Hovgaard.—(2) Evolution of Climate, by Prof. J. Geikie (maps). Physical Basis of Political Geography, by H. J. Mackinder.—(3) Around and About Armenia, by Col. M. S. Bell. Wall of Derbend, by Hon. J. Abercrombie (map).—(4) Borderlands between Geology and Geography, by the Duke of Argyle (map). Vertical Relief of the Globe, by H. R. Mill (map). Southern California, Past and Present, by Prof. W. G. Blaikie.—(5) The Vikings, by P. Du Chaillu. Recent Explorations in Peru and Bolivia, by H. Guillaume.—(6) The Stevenson Road Country, by Rev. D. Kerr Cross (map). The Mapping of the World, by J. G. Bartholomew (map). Map Projections, by W. A. Taylor.—(7) The Emin Pasha Relief Expedition, by H. M. Stanley (maps).—(7, 8) Voyage Inland from Canton, by Dr. W. G. Dickson.—(8) Russian Laplanders, by V. Dingelstedt.—(9) The Maltese Islands, by John Murray (map and plates).—(10) Physical Features of Brazil, by J. W. Wells. Present State of the Ordnance Survey, by H. T. Crook.—(12) A Railway Through Southern Persia, by Major-Gen. Sir F. Goldsmid. Spanish Honduras, by W. Pilcher.

Glasgow. Proceedings of the Philosophical Society of Glasgow. Vols. XVI., 1884-1885 ; XVII., 1885-86 ; XVIII., 1886-87 ; XIX., 1887-88 ; XX., 1888-89 ; XXI., 1889-90.—1888-9 : Chili, Present Position and Future Prospects, by J. C. Rogers, Vice-Consul (with map). Fisheries in Relation to Civilisation, by W. A. Smith. Primitive Aryan Civilisation, by Dr. J. Colville. Land Ownership in Scotland, by R. T. Younger, M.A., LL.B. State Purchase of Land in Ireland, by M. Davidson, M.A., LL.B. Magnetic Constants of Earth's Field, by A. Tanakadate, B.Sc. Agricultural Education in this Country and Abroad, by C. M. Aikman. "Ticketed Houses" of Glasgow, by Dr. Russell.

Glasson Dock, Lancaster. Kludonometric Time Tables. Illustrated with Numerous Charts and Plates. Tables for the Lancashire Coast (1888, 86pp.), Lancashire Coast and Bristol Channel (1889, 170pp; 1890, 278pp.), by W. N. Greenwood, F.R.Met.Soc.

Leeds. Report of the Yorkshire Union of Mechanics' Institutes. 1873, 1877, 1878, 1879, 1880, 1881, 1882, 1884, 1885, 1888, 1889, 1890.

Liverpool. Report of the Committee of the Free Public Library, Museum, and Walker Art Gallery. Thirty-sixth, 1889; thirty-seventh, 1890.

Liverpool. *Research*, a Monthly Illustrated Journal of Science. Edited by A. N. Tait, F.I.C., &c. Vol. I., Nos. 4-6, 1888; 7-12, 1889. II., Nos. 13-18, 1889; 19-24, 1890.—Portrait Gallery—Portraits and Biographies of the following: (4) Professor T. G. Bonney, D.Sc., F.R.S.; (5) R. A. Proctor, B.A., F.R.A.S.; (6) Sir J. Lubbock, Bart., M.P., F.R.S., &c.; (7) J. W. Davis, F.G.S., &c.; (8) Arabella B. Buckley (Mrs. Fisher); (9) Professor W. Boyd Dawkins, M.A., F.R.S., &c.; (10) Professor T. H. Huxley, D.C.L., LL.D., &c.; (11) Professor Sir W. Thomson, M.A., &c.; (12) Sir R. S. Ball, LL.D., F.R.S.; (13) Sir J. W. Dawson, C.M.G., &c.; (14) M. E. Chevreul; (15) Professor W. H. Flower, C.B., &c.; (18) H. C. Sorby, LL.D., &c.; (19) Sir F. A. Abel, C.B., D.C.L., &c.; (20) Professor G. J. Romanes, M.A., LL.D., &c.; (21) Professor J. W. Judd, F.R.S., &c.; (22) late S. A. Adamson, F.G.S.; (23) William Pengelly, F.R.S.; (24) Professor G. Henslow, M.A., F.G.S., James Bell, C.B., &c.—(4, &c.) Scientific Aspects of various Health Resorts. Reports of various Scientific Societies.—(6, 7) Durham Salt District, by E. Wilson, F.G.S. (with sketches).—(13, 14, 15) Evolution of the Colorado Cañon, by W. Hewitt, B.Sc. (illustrated).—(19) Luminosity of Plants by T. W. Dicker.—(20) Ship Railways, by R. Holland.—(21) Dust in the Air, by Dr. McPherson.—(22) Coast Erosion in Yorkshire, by Rev. E. M. Cole, M.A.—(23) Salt Districts of North America, by T. Ward, J.P. Ship Preservation from Corrosion, by R. Holland.—(24) Bees and Flowers by G. W. Bulman, M.A.

London. The Aborigines' Friend. Vol. III., No. 11, 1888.

London. The Anti-Slavery Reporter. Vol. VIII., Nos. 2-6, 1888; IX., 1-6, 1889; X., 1-6, 1890.—1889: (1) Revolution in Uganda.—(2) H. M. Stanley's Journey in Central Africa.—(3) Slavery in Zanzibar and Pemba, by Bishop Smythies.—(4) Imperial British East Africa Company.—(5) Slave Trade in Zanzibar and Pemba. British Zambesia.—(6) Tippoo Tib.—(6, &c.) Anti-Slavery Congress at Brussels.—1890: (1, 2) H. M. Stanley and the Slave Trade.—(2) Present Condition of Egypt.—(3) H. M. Stanley in England. Tropical East Africa: A Ten Years' Review, by Dr. Felkin (with sketch map). The History of the Stevenson Road. The West Indies, by H. Fowler.—(4) Imperial British East Africa Company.—(6) Slavery among the Chins (Burmah).

London. L'Armenie, Journal Politique et Littéraire. First year. Nos. 1, 2, 3, 7, 8, 9, 11, 12, 1890.—(1) Arts and Crafts of Armenians in Russia. Short History of the People of Ararat.—(2) Unpublished Eastern Tales: Adam and Eve, Cain and Abel.—(3-12) History of the Study of the Armenian Language in Europe, by Professor G. A. Schrumpf.—(12) What the Armenians Want.

London. Journal of the East India Association. Vol. XVI., 1-6, 1884; XVII., 1-5, 1885; XVIII., 2-4, 1886; XIX., 1-7, 1887; XX., 1-5, 1888; XXI., 1, 2, 3, 5, 1889 (No. 4 missing); XXII., 1-5, 1890.—1889: (1) Value of European and Native Life in India, by P. M. Tait, F.R.S.S., &c.—(2) The Indian National Congress, by C. W. Whish.—(5) The Financial Condition of India, by A. K. Connell. 1890: (1) India in the House of Commons, by Sir R. Temple.—(2) Preservation of Industrial Arts of India, by C. P. Clarke.—(3) Some Results of the Permanent Settlement, by H. J. Reynolds.—(5) Proposed Organisation of Army in India, by General Sir O. Cavenagh.

London. Journal of Education: A Monthly Record and Review. Nos. 224-233, March-December, 1888; 234-245, January-December, 1889; 246-257, January-December, 1890.—(234-5-7-8) Principles of Physical Education, by C. Roberts. (237) A Bureau of Education, by Sir P. Magnus.—(238) My Assistant Masters, by Ascott R. Hope.—(240) Teaching of English, by C. Lowry.—(242) Natural Development of Faculty, by Mrs. Corbett.—(243) Higher Commercial Education, by T. W. Haddon.—(244) The New Law on the Common Schools, Norway.—(246) The Limits of Education, by C. Colbeck. Subject Teaching v. Form Teaching, by E. M. Clark.—(247) History and Mock-History, by R. F. Charles.—(248) Intellectual Education at Public Schools, by S. Lupton.—(249) Dr. Fitch and the American Schools.—(250-51) Scholarships from Public Elementary Schools, by F. Bond.—(251) The History of Educational Museums, by W. H. Widgery. Manual Training, by G. Ricks, B.Sc.—(252) Leipsic v. Nääs.—(254) Italian Education (by an Englishman in Italy).—(256) Education System of Girls' Schools compared with that of Boys, by D. Beale.

London. Egypt Exploration Fund. Annual Report, 1886-7.

London. Circulars from the Emigrants' Information Office, 31, Broadway, London. Combined Circulars for Canada, Australia, and South Africa. July, October, 1888; January, April, July, October, 1889; January, April, July, October, 1890.

London. Le Haïasdan, Organe de l'Association Patriotique Arménienne. First year. Nos. 1, 2, 7, 8, 9, 10, 11, 12, 13, 14. 1889. Containing News, Correspondence, &c., about Armenia, printed in both French and Armenian.

London. The Journal of the Royal Asiatic Society of Great Britain and Ireland. Vol. XVIII., Parts 1-4, 1886; XIX., 1-4, 1887; XX., 1-4, 1888 (1889, none received); XXII., 1-4, 1890.—1890: (1) Adventures of Japanese Sailor in Malay Archipelago, 1764-71, by W. G. Aston. Archæological Excavation in India, by A. Rea.—(2) Early History of Northern India, by J. F. Hewitt.—(2, 3, 4) Early History of Kannada Literature, by E. L. Rice.—(3) Chinese Antiquity, by H. J. Allen; and other valuable papers and information.

London. Royal College of Science Magazine (late Science Schools Journal). Conducted by the Students of the Royal College of Science, South Kensington. No. 1, 1886; 2-7, 1887; 8-16, 1888; 17-22, 1889; 23-27, 1890.—Our Country Cousins.—(19) Yorkshire College, Leeds.—(20) University College, Aberystwith. (21) Queen's College, Cork. Cycling in Dauphiné and Savoy, by G. A. J. Cole. (25) Dredging in the Irish Sea, by G. J. Hill.—(26) Sir Warington W. Smyth, F.R.S., in Memoriam, by Ben Howe.—(27) Professor Huxley, LL.D., F.R.S.: An Autobiography (with portrait).—(30) Professor J. W. Judd (with portrait). Geology of South African Diamond Fields, by H. D. Griffiths, A.R.S.M.

London. Proceedings of the Royal Geographical Society from the commencement, 1830 to 1890.—1889: (1) Southern Morocco and the Atlas Mountains, by J. Thomson (map). Visit to Sheshouan, by W. B. Harris.—(2) Journeys in Central Africa, by F. S. Arnot (map).—(3) The Gran Chaco and its Rivers, by Capt. J. Page (map). Glacier Regions of Selkirk Range, British Columbia, by Rev. W. S. Green (map).—(4) Explorations on Chindwin River, Upper Burma, by Col. R. G. Woodthorpe (map). Letters from F. C. Selous, Upper Zambesia (map). Formosa, by G. Taylor.—(5) Letter from H. M. Stanley (map). The Transcaspian Railway, by Hon. G. Curzon (map). Antanambalana River, Madagascar, by L. H. Ransome (map).—(6) Explorations on Welle-Mobangi River, by Capt. Vangele. The Congo and Ngala and Aruwimi Tributaries, by J. R. Werner (map). Further Explorations in the Caucasus (map and view).—(7) Visit to Mount St. Elias, by H. W. Topham (with illustration and map).—(8) Journey Across Greenland, by Dr. F. Nansen. Tribes of North-Western Morocco, by W. B. Harris (with map).—(9) Louisiade and D'Entrecasteux Islands, New Guinea, by B. H. Thomson (map). Expedition to Cockscomb Mountains, British Honduras, by J. Bellamy (map).—(10) Lake Tanganyika, by E. C. Hore (map).—(11) Valley of Upper Nile, by E. G. Ravenstein. Expedition Between the Queensland Boundary and the Telegraph Line, Australia, by D. Lindsay (map).—(12) Cyprus, by Lieut.-General Sir R. Biddulph (map).—1890: (1) The Bahrein Islands, Persian Gulf, by J. T. Bent (with map and illustrations).—(3) Chinde River and Zambesi Delta, by D. J. Rankin, M.R.A.S. (map). Journey from Blantyre Towards the Loangwa River, by A. Sharpe (map). Visit to Newly-Emerged Falcon Island, South Pacific, by J. J. Lister, M.A. (with illustrations).—(4) The Owen Stanley Range, New Guinea, by Sir William MacGregor, K.C.M.G. (map). Map of Eastern Africa, by J. T. Last (map in two sheets).—(5) Travel in the Caucasus, by Douglas W. Freshfield (with illustrations and maps).—(6) Geographical Results of Last Expedition, by H. M. Stanley (map). Ascent to Summit of Kilima-njaro, by Dr. Hans Meyer (maps). Journey Through Mashonaland in 1889, by Right Rev. G. W. H. Knight Bruce (map). (7) Explorations in Solomon Islands, by C. M. Woodford (map). (8) Explorations in Cilicia Tracheia, Asia Minor, by J. T. Bent (map).—(9) The Karun River, and South-West Persia, by Hon. G. Curzon (maps). Across Luristan to Ispahan, by H. B. Lynch (map). (10) Lieutenant Vaughan's Journey in Eastern Persia, by Major-General Sir F. Goldsmid, C.B., K.C.S.I. Yoruba and Colony of Lagos, by Sir A. Moloney, K.C.M.G.—(11) Zambesia, by E. A. Maund (map). The Partition of Africa (map).—(12) British Central Africa, by H. H. Johnston, C.B. (map). Lake Nyassa to the Upper Zambesi River, by A. Sharpe (map).

Manchester. Art Museum. Report 1885, 1886, 1888-89, 1889-90. Handbook, by T. C. Horsfall, and an Account of the Object and Work of the Museum.

Manchester. Chamber of Commerce. Annual Reports, 1886 to 1890.—1889 contains also Addresses on Indian Railways, by J. Westland and Lieut.-Colonel Marryat.

Manchester. Chamber of Commerce Monthly Record, Nos. 1-12, 1890.—(1) Russian Exports. Foreign Trade of Greece.—(2) Anglo-French Treaty Respecting Boundaries in West Africa.—(3) Cotton Trade, by James Jardine. African Oil Rivers District. Farming in Western United States. Russian Trade with China.—(4) British Trade with Mexico. Siam. French Trade and Industry, 1889. Population of Greece.—(5) Commercial Geography, by Dr. L. C. Casertelli. Wealth of India, and the Hindrances to its Increase, by Wm. Birk Myre.—(6) Cotton Industry in Austria-Hungary. Railways in India. The Persian Trade *viâ* Trebizond.—(7) The Congo Free State. The Salonica Trade Route to the Danubian State.—(8) Production of Coca in Bolivia.—(9) Trade with Western China. The Rajpootana Desert Railway Scheme. Coal Mining in Belgium.—(10) The Trade of Morocco.—(12) Railways in Northern India. Bombay Cotton Bills.

Manchester. The Co-operative Wholesale Society Limited Annual for 1881, 1883, 1884, 1887, 1888, 1889. 1889: Reports of the Co-operative Wholesale Society Limited of England and Scotland. It also contains Contributions on General Commercial Questions, among others a paper about Commercial Geography by Rev. L. C. Casartelli, Ph.D., M.A., and one giving an Account of the Origin and Development of the Manchester Ship Canal.

Manchester. Field Naturalists' Society. Annual Report of the Committee. 1874 to 1883.

Manchester. Geological Society's Transactions. Vol. XVII., Parts 16, 17, 18, 1883-84. XVIII., Part 2, 1884-85.

Manchester. Scientific Students' Association. Report and Proceedings for 1883.

Manchester. *The Ship Canal News.* Vol. I., Nos. 10-26, 1888; II., 1-26, 1888-89; III., 1-26, 1889; IV., 1-12, 1889-90; V., 1, 2, 1890. Contains accounts of the Progress of the Canal, and Short Notes on Commercial Subjects. Fully illustrated, chiefly with views on the Canal.

Manchester. *The Textile Mercury.* Vol. I., Nos. 1-3, 7, 8, 10-36, 1889; II., 37-39, 41-46, 48, 50-54, 56, 57, 59, 61, 62; III., 63, 65-68, 70-80, 82, 84-88, 1890.—1889: Articles and Correspondence about Textile Industries.—(12) The Old Silk Mill, Derby, by E. E. Marsden (illustrated).—(17) British East Africa.—(21, 24, 25, 26, 27) Egyptian Tapestry, by Alan S. Cole (illustrated).—(23) Revival of Industry in Ireland.—(28) Africa as a Source of Cotton Supply, by Rev. A. M. Mackay, C.M.S.—1890: (38, 39, 41, 50) Ancient Fabrics and Embroideries, by Professor Dr. J. Lessing.—(42) France and her Treaties of Commerce.—(54) Weaving and Embroidery in the East, by Professor Lessing.—(59) The Drapery of Equatorial Africa.—(61) Flax Culture in Belgium.—(63) Account of Denver, Colorado, U.S.—(65) Cochineal in the Canary Islands.—(68) The Opening up of Persia.—(74) Sisal Fibre in the Bahamas.—(78) Carpet-making in Syria, by Consul Bissinger (2) (U.S. Consul at Beyrout).—(79) Descriptive Sketch of Candry. (85) Something about Indiarubber.—(86) Weaving among the Ancient Germans.

Manchester. *The Textile Recorder.* Published by John Heywood, Manchester. Vol. IV., Nos. 38-44, 1886, 45-48; V., 49-56, 1887, 57-60; VI., 61-68, 1888, 69-72; VII., 73-80, 1889, 81-84; VIII., 85-92, 1890.—In all numbers, Articles about Commerce between various Countries, more especially in relation to Britain, and the Progress of Textile Industries. In each number, Special Articles about various Machines used and operations performed in these Industries, with many illustrations, diagrams, patterns, and specimens. In all numbers: Designing and Manufacturing, by R. Beaumont, F.S.A.; and Textile Colouring, by C. O'Neill, F.C.S., F.C.A.—1889: (69) Manchester Technical School.—(74) British Trade Prospects, by Sir R. Temple.—(80) Commercial Interests in West Africa, by Governor Moloney, of Lagos.—1890: (84) Cotton Growing in Ceylon. French and Foreign Competition in Senegal.—(86) Woollen Manufacturers in South Africa.—(87) English and American Competition in South America.—(89) Chinese and Japanese Silk Culture.—(90) Japanese Woollen Manufactures.—(94) How a Lace Curtain is Made (illustrated).—(95) How the First Spinning Machinery was taken to Belgium, by W. E. A. Axon.—(86) School Museums.—(98) New Technical Institutes in Yorkshire.

Newcastle-on-Tyne. Journal of the Tyneside Geographical Society. Vol. I., No. 1, 1888; No. 2, 1889; No. 3, 1890.—(1) First Annual Report.—(2) Scientific Earth-Knowledge as an Aid to Commerce, by H. R. Mill, D.Sc.—(3) Through Darkest Africa, by H. M. Stanley. Incidents connected with the Relief of Emin Pasha, by Surgeon T. H. Parke, A.M.D. The Transvaal Republic: Its Mines and Minerals, by W. Y. Campbell.

Salford. Annual Report of the Museum Libraries and Parks Committee. 1884-85, 1885-86, 1886-87, 1887-88, 1888-89.

MISSIONARY SOCIETIES AT HOME AND ABROAD.

The Missionary Societies' Journals are full of most interesting and valuable facts, and some of them are illustrated with maps, portraits, views, and pictures. Only the most important papers relating to Geography have been indicated.

Such Journals as The Baptist, Church of England (The Intelligencer), Catholic Mission, St. Joseph's Magazine, the Scotch Missionary Journals, and Central Africa, are invaluable.

Basel. Jahresbericht der Evangelischen Missions-Gesselchaft zu Basel.—Zweiundsiebenzigster, 1887. Dreiundsiebenzigster, 1888. Vierundsiebenzigster, 1889. Fünfundsiebenzigster, 1890. Information respecting the Missions in South-West India, China, and the Gold Coast, and Cameroons. Reports of the Secretary and the Inspector, with map of South-West India, 1889. Report of Inspector Ohler, 1890.

Edinburgh. Free Church of Scotland Monthly. December, 1886; October, 1888; January to December, 1889; January to December, 1890.—1889: (January) In East and Central Africa. (June) Manitoba. (August) Simla, Among the Himalayas. (September) To Porchiavo and Back. (October) Professor Blaikie on the Pacific Coast. (November) Homeward Through Canada.—1890: (February) Our Title to Nyasa land. (March) The Central Provinces and Berar (map). (April) Principal Rainy on New Zealand. (August) Sacrifice of Our Nyasa Highland Sanitarium. (September) Nyasaland (map).

Edinburgh. Church of Scotland. Life and Work: A Parish Magazine. July, August, 1889.

Edinburgh. The Church of Scotland Home and Foreign Mission Record. Nos. 57-60, 1889; 61-72, 1890.—Interesting information on Mission Work in India, China, Palestine, Egypt, the Colonies, East Africa, Blantyre, &c., &c. A number of interesting articles by Sir Chas. Bernard, K.C.S.I., F. F. Roget, Esq., Mrs. Rice, Rev. H. Duncan, Rev. J. Muria, &c.

Freiburg (Baden). Die Katholischen Missionen. No. 12, 1887; 1-12, 1888; 1-12, 1889; 1-12, 1890.—This journal is one of the most interesting of the missionary publications, giving Articles, Reports, &c., dealing with the People, Topography, and Natural History of the various Stations. The most important articles, very fully illustrated, are here indicated.—1889: (1, 2) Asia Minor.—(1, 2, 3, 5)

Damascus.—(1, 3, 5, 10, 11) Morocco.—(1, 3, 5. 6, 7, 9, 11) China.—(1-12) East Africa.—(2) Map of East Africa.—(2, 10) India.—(4) Chili.—(8) Aleppo.—(8, 9, 12) Philippine Islands —(9-11) Congo District.—(11) Fiji Islands.—1890 : (1, 2) Canada.—(1-3, 9-12) India.—(1, 5, 8) Philippine Islands.—(2, 4, 9, 12) Brazil.—(3) China.—(4) Central Asia.—(4-6) Burmah.—(7, 8, 11) Congo District.—(5) Fiji Islands.—(10) Route Map : Stanley's Last Journey Across Africa.—(10, 11) Central Africa.

London. Missionary Herald of the Baptist Missionary Society. August to December, 1885; January to December, 1886, 1887, 1888, 1889, 1890.—1889 : The Congo Mission (numerous communications). Life of Rev. T. J. Comber. The Famine in China (several letters on its severity). Asceticism in Missions. The Late Mrs. Joseph Gurney. A Congo Wedding Group. Opium Poisoning in North China. Eastern, Western, West Indian, and European Mission (with illustrations). The Wathen Mission House. Map of Stanley Pool. Mrs. Ellison and Hindu Ladies (portraits). Group of Congo Missionaries (portraits). India, Notes on. Agra, The Leper Asylum, &c. Shansi, North China. The Bahamas. The Aboriginal Peoples of India. Scenes in Peking. Boma, Congo River (photograph). Kiula, Chief of Kindinga. Madaripore (with illustrations). Two Congo Faces : A Congo Fetish (with illustrations). East Bengal. Etoto, Congo (iron smelting, chief, and village, with photographs). Near the Thibet Frontier. San Salvador, Africa. Government Female Training College, Kingstown, Jamaica. China's Sorrow. Sunday Schools in India. Sir Samuel Morton Peto. Zenana Missions. Letters from Mrs. H. W. Bentley, Congo. Buddhist Temple and Monastery at Gyd (with views). Noki (from photograph).—1890 : Distribution of China Famine Relief Fund. Dikoto, Cameroons. Stanley Pool, by Rev. J. L. Rogers. The Ching Monastery, near Tai Yuen Fu (with view). A Chinese Tablet. Map of Shantung and Shansi. Heads of Congo Natives (with illustrations). La Tour Italy (with view). Ndombi, an African Chief (with photograph). Shantung, China, by Rev. W. A. Wills. Kingston, Jamaica, by Rev. J. East. Group of Congo Missionaries (with photographs). Letter from Rev. G. Grenfell, Bangala. Kali Ghat. The Late Lifiaulwisu, Mbanga. Indian Fruit Seller (photograph in group). Ninety-Eighth Report; The Missionaries; Eastern, Western, West Indian, European Missions; Finance, &c., &c. Group of San Salvador Boys and Rev. Ross Phillips. River Scenes in Bengal. Letter from Rev. W. H. Bentley, Congo River. Calabar College, Jamaica. The Cathedral Ruins, San Salvador (with view). Patna, by Rev. J. Stubbs. A Chinese Thanksgiving Sheet. A Congo Voyage. New Up-River Station at Upoto. The "Place" at Bolobo. Accident in Shanghai. Scenes at Tarokeshore (with views). Taxes in the Congo Free State. Indian Ferry Boat (with photograph). Dacca. Group of Jamaica Ministers (with photograph). The Acting Governor-General of the Congo Free State on Missions. Cuttack, Orissa. Sir Charles Wathen and the Congo Mission. An Indian Cremation. Bolobo Boys Playing Hockey (photograph). Travelling in China, by Mr. and Mrs. Midhurst (with views). The Fort of Cuttack, or Katak (with photograph). Work in Patna, by Rev. H. Patterson (with photograph of Ekka). A Funeral Dance at Bolobo, Upper Congo. The Missionary Guild. Lantern Slides and Lectures on India, China, Congo, &c., &c.

London. Eighty-Sixth Report of the British and Foreign Bible Society. 1890.—Reports of the disposal of Bibles in all parts of the world, with many excellent ethnographic, linguistic, and general maps, by R. N. Cust, LL.D., and others.

London. Church Missionary Society for Africa and the East. Proceedings for the years 1883-84, 1885-86, 1886-87, and 91st Year, 1889-90.—Reports from West Africa, Yorubu, Niger, Eastern Equatorial Africa, Egypt, Arabia, Palestine, Persia, India, Ceylon, Mauritius, China, Japan, New Zealand, North West America, North Pacific, and a valuable Note on the Spelling of Native Names. Maps of the World, Intertropical Africa, Eastern Central Africa, The Mohammedan Lands of the East, North India, Western and Southern India and Ceylon, China and Japan, New Zealand (North Island), and British North America. The maps are very well done, and are of value. The great interest of the Report is in Uganda, but almost every page is full of matter both scientific and religious. Light is thrown on native customs, and a good many problems are raised for wise and careful solution in the attempt to civilise the savage and to Christianise the more polished peoples.

London. Church Missionary Intelligencer and Record. Vol. XII., 1887; XIII., 1888; XIV., 1889; XV., 1890.—XIV.: Muscat, Zanzibar, and Central Africa, by A. M. Mackay. Central India. Uganda, by the Editor. The Far West of China, and Journeys in China, by Rev. G. H. Horsburgh. Journal of Mrs. Pruen in German East Africa. Dr. Bruce on the Caspian. Canon Taylor's Critics. On Educational Missions, by Rev. W. Jukes. The Red Indians, by Archdeacon Phair. The Third Revolution in Uganda, by A. M. Mackay. The House of Laymen on African Slavery. Mohammed and Mohammedanism, by Dr. Koelle. James Frederick Schön, by Dr. Cust. Letters from Eastern Equatorial Africa, by A. M. Mackay, Revs. E. C. Gordon, Walker, Price, Cole, and Wood. Schools in West Africa, by Rev. F. Nevill. Archdeacon Wolfe's Visit to Fuh Kien. Japan, by Rev. E. W. Syle, D.D. Some Under-currents of Thought in the Native Society of India, by Rev. E. H. Perkins, Amritsar. Kin-Shin, by Rev. A. B. Hutchinson. Ceylon. Pakhoi, South China, by Dr. E. G. Horder. The Chu-Chee Mountains, by Rev. A. Elwin. Kashmir: The Medical Mission—Visit of the Rev. R. Clark. Japan: Bishop Wilberforce, by Rev. G. F. Warren. The Bedouin, by Rev. John Zillar. Three Weeks in Fuh-Ming, by Rev. J. Martin.—XV.: The Destruction of Mpwapwa, by Rev. J. C. Price. North-American Philology, by Dr. Cust. A Mohammedan Manifesto against Christian Missions. The Maories of King Country, New Zealand, by Revs. Wiki te Pda and Hone Papahia. H. M. Stanley on the Uganda Mission. Letters from the Rev. R. H. Walker, Nyanza. Mamboia in 1889, by Rev. A. N. Wood. Tour in Sindh, by Rev. A. E. Ball. Abeokuta and Lagos, by the Bishop of Sierra Leone. The Mohammedan Community in Bombay, by Rev. W. T. St. Clair Tisdall. Letters from Uganda, by Revs. E. C. Walker and R. H. Walker, and Messrs. D. Deekes and the late A. M. Mackay. Tokushima, Japan, by Rev. W. P. Duncombe. Japan, by C. J. C. The Anglo-German Agreement, by J. E. C. Hing-Hwa Prefecture, Puh-Kien Province, China, by Rev. Ll. Lloyd. Mr. Stanley's "In Darkest Africa," by Mr. Stanley and Mr. Mackay. The Godavari, by Rev. J. Cain. Uganda, by Rev. R. H. Walker. India, by Rev. W. R. Hackett. The Afghan Mission, Peshawar, by Rev. Worthington Jukes. The Soudan and Upper Niger Mission. Uganda, by Mr. Walker. On Infant Marriage and Enforced Widowhood in India, by An Old Indian.

London. London Missionary Society. 90th, 91st, 92nd, 93rd, 94th Reports; 95th Report for the year ending April 30, 1889; and 96th Report for the year ending March 31, 1890.—Reports from China, North and South India, Travancore, Madagascar, South Africa (Kaffirland, Bechuanaland, Matebeleland), Central Africa, British Guiana, Polynesia (Society, Austral, Hervey, Savage, Samoan, and Loyalty Islands), and New Guinea. Maps of Hong Kong, District of Amoy, China, North India, South India, Madagascar (South-East Coast and Tamatave Districts), South Africa, Central Africa, Polynesia, and New Guinea. The communications are of great interest, especially from Central Africa, China, and Madagascar. Geographical and Anthropological Notes, Political References, Industrial Work, Medical Work, Schools, and the large number of natives engaged in the work of the Society, are all given and referred to in the Reports.

London. The Chronicle of the London Missionary Society. January-December, 1884; January-December, 1885; January-July, 1886.

London. Catholic Missions. Vol. I., Nos. 1-14, 1886; II., 15-24, 1887-88; III., 25-36, 1888-89; IV., 37-48, 1889-90; V., 51, 52, 55, 56, 1890 (49, 50, 53, 54 missing).—1889: (January) The Land and People Round the Niger Delta, by H. H. Johnston. (February) Map of East Africa, and several interesting Views in German Territory. (July) The Karens of Burma: An Ethnological Study (continued through succeeding numbers), by Rev. Father Bringaud. (November) The Island of St. Vincent (with map and illustrations).—1890: (August) Syria and the Maronites. (November) The Land of the Gallas and Somali. (December) Up the Sarstoon River (British Honduras).

London. St. Joseph's Foreign Missionary Advocate. Vol. I., Nos. 1-4, 1883; 5-8, 1884; 9-12, 1885; 13-16, 1886; 17-21, 1887; 22-24, 1888. Vol. II., Nos. 1-4, 1889; 5-8, 1890 (No. 7, 1890, not received).—I.: (1) North Borneo.—(5) New Zealand.—(11) The Zambesi (with map).—(12) The Soudan (with large map).—(13) The Soudan (with illustration).—(15) Madras (with illustration).—(18) The Iroquois Indians (with illustrations).—(20) The Abnakis (illustrated).—

(21) The Singhi Mountains (with illustration). Cairo (with illustration).—(22) Tambunan North Borneo (with illustrations).—(24) Japan and the Japanese (with illustrations). The African Slave Trade.—II.: (5) The Pyramids of Egypt.—(8) North Borneo (with map).

London. Eighty-sixth Annual Report of the Religious Tract Society. 1885.

London. Missionary Year Book for 1889. Published by the Religious Tract Society.

London. The Society for the Propagation of the Gospel in Foreign Parts. Reports for the years 1884, 1886, 1888, and 1889.—1889: Reports from India, Ceylon, Singapore, Borneo, China, Japan, Corea, South Africa, St. Helena, Mauritius, Madagascar, Australia, New Zealand (Norfolk Island, Fiji, Honolulu), North America (Canada and North-West), West Indies and South America, and Europe. Maps of Bishop of Bloemfontein's Journey to the Zambesi; Language Map of India; Burmah and the Straits; China, Corea, and Japan; Grahamstown and St. John's; Zululand; Betsiring Country, Madagascar; Madagascar; Newfoundland; and portraits of Bishops Whittey, Rawle, and the late Bishop of Zululand.—The Reports from British North America, Newfoundland, Central Africa, Madagascar, India, and Polynesia, are exceedingly interesting.

London. The Mission Field. Vol. XXX., Nos. 355-360, 1885; XXXI., 361-372, 1886; XXXII., 373-384, 1887; XXXIII., 385-396, 1888 (387 and 395 missing); XXXIV., 397-408, 1889; XXXV., 409-420, 1890. — 1889: (397) The Southern Tounghoo Mission. New Guinea, with map and four illustrations. St. John's, Kaffraria. Two Years in the Mission of Sandwich Bay, Labrador, with a map and illustrations. Work in the Rewari District. The China Famine. Madagascar, with illustrations. Nazareth, with map. Zululand, with map and illustrations. The Telugu Missions, with illustrations. Japan, with three illustrations. From Bloemfontein to the Zambesi. Rewari, with illustration. Shurbo, Upper Burma, with illustrations. The Bishop of Zululand's Journey to Delagoa Bay, with illustration. Widening Horizons, with map of Southern Africa. English Settlements in North China, with a map and illustrations. Under the Rocky Mountains, with illustrations.—1890: Phokoane and Its Outposts, with map and illustrations. British North Borneo, with illustrations. The Karens, with map and illustrations. Puthiamputhur Forty-five Years Ago and Now. Zulu Mission, with illustrations. St. Helena, with illustrations. The Betsirirg, Madagascar. Cawnpore, with illustrations. Chôta Nagpore, with map and illustrations. Hawaii, with map and illustrations. Nazareth, Southern India. Bloemfontein and Mashonaland, with map. Japan, with map and illustrations. The Windward Islands. Singapore, with illustrations. Manitoba, with map and illustrations. Delhi, with map and illustration. Western Australia, with map. Kobé, Japan, with illustration. Bechuanaland, with illustration. Telugu, with map and illustrations. Rewari.

London. Thirty-First Report of the Home and Foreign Missions of the United Methodist Free Churches, for the year ending June, 1887.

London. Central Africa. A Monthly Record of the Work of the Universities' Mission. Nos. 25-36, 1885; 37-48, 1886; 49-60, 1887; 61-72, 1888; 85-96, 1890.—1889: (Jan.) Nyassa News, by Captain of the Charles Janson.—(Feb.) Bishop Smythies Among the East African Insurgents.—(April) News from the Rovuma. Position in Zanzibar, by Rev. W. C. Porter.—(May) Lukoma, by Archdeacon Maples. (June) Interesting Letter relative to the Portuguese in East Africa, by Rev. W. P. Johnson.—(July) View of Street in Pangani.—(September) Letter descriptive of Journey from the East Coast to Lake Nyassa, by Bishop Smythies.—(October) The Wissman Expedition.—1890: (February) The Masasi District and People, with map.—(April) The People of Masasi, by Rev. T. Lupton Taylor.—(August) Great Britain and Germany, by Rev. Horace Waller.—(September) From Nyassa to Naples, by Archdeacon Maples.—(December) Nyasa or Nyassa.

London. Central African Mission. Reports for 1882-83, 1883-84, 1884-85, 1885-86, 1886-87, 1887-88, 1888-89, 1889.—1888-89: Reports from Zanzibar, Rovuma, Nyassa, Magila Districts and Homework. Map of Central Africa, two views of St. John's Church, Mbweni, Zanzibar.—1889: Reports as above. The Political Situation. The Usambara Country. The Bishop's 1889 Journeys. Anti-Slavery Edicts at Zanzibar. New Station on Chisumulu Island. The Bishop's Visit to

Nyassa with map. View of Magila. Mission House, Misozwe.—1890: Reports as above. The Anglo-German Agreement. Self-help among the Natives. The Swahili Bible. The Slave Trade. Growth of South African Church. Political Aspects. Interesting Letters from Mr. Johnson, Archdeacon Maples, Mr. Porter. The Work of the Sisters. A new and valuable map. Newala Church. Nyasa Teachers (native groups). The Lake and Vessels.

London. Wesleyan Methodist Missionary Society. 73rd Report, 1887; 74th Report, 1888; 75th Report, 1889; 76th Report, 1890.—Reports from Missionaries in Europe, Ceylon, Continental India, China, South and West Africa, America, and of the Irish, French, West Indian, Australian, and Canadian Conferences, and Army and Navy Work. Maps are inserted of France, Madras district, Sierra Leone and Gambia, Bahamas. Medical work, natives employed, education, and zenana work are referred to in the reports.

London. Wesleyan Missionary Society Notices. Monthly. 1887, 1888, 1889, 1890.—1887: (April) Among the Gonds, by Rev. J. Parson.—(May) Lagos, by Mr. J. H. Samuel.—1888: (March) Hakka Work in the Shin Kwan Prefecture, by Rev. S. G. Tope, with map.—(May) Ying Tak, Shin Kwan (illustrated).—(June) From London to Mandalay, by Rev. Arthur H. Bestall.—1889: (August) The Abode of Snow (Bengal), by Rev. J. R. Broadhead.—(December) A Thousand Miles into the Interior of South Africa, by Rev. R. F. Appelbe.—1890: (October) In the Highlands of the Kwong Tung Province, by Rev. S. G. Tope. (December) Through the Drackensberg Mountains to Swaziland, by Rev. Owen Watkins.

London. At Home and Abroad. A Wesleyan Missionary Magazine for Young Helpers in the Work. Monthly. 1887, 1888, 1889, 1890.—This is a Juvenile Illustrated Missionary Magazine, well printed in large type, and illustrated. The subjects are mainly taken from the Missionary Notices (which see).

Mangalore. Annual Report of the Basel German Evangelical Missionary Society in South-Western India. 48th Report, 1887; 49th, 1888; 50th, 1889.—The value of the Reports is very great, exhibiting Mission Work carried on by others than British people in India, by preaching evangelisation, education, medical work, the large use of the printing press, and industrial and mercantile establishments. The splendid unselfishness of these missionaries and the success attending their labours is indicated on every page. They may well be referred to for comparison with some of the mission work of other agencies.

Paris. Missions d'Afrique (d'Alger). Sous la Protection de Notre-Dame d'Afrique. Journal of Work. Nos. 69, 77, 1889; 79, 84, 1890.—African Pilgrimage to Rome. The Abolition of African Slavery: Letter from the Cardinal Lavigerie. Remains of the Ancient African Church in the Algerian Sahara. St. Anne of Jerusalem. Missions in Algeria under the Patronage of St. Augustine and St. Monique. Equatorial Africa: Letters from the Rev. R. P. Bresson, at Zanzibar. Letters from the Nyanza, Myab (Sahara), Mpala, Carthage, Buganda, and Tanganyika. The Arab Christian Village of the Altafs. Triumph of Mwanga. Circular Letter of M. the Cardinal Layigerie on African Slavery. Brief from H.H. Pope Leo 13th to H.E. Cardinal Lavigerie on the African Mission and the Work of the Anti-Slavery Society. Monsignor Lirinhac at Zanzibar. The Address of Cardinal Lavigerie on the Dismissal of a Number of Missionaries to Central and North Africa. The Address of H.E. Cardinal Lavigerie on Slavery at St. Sulpice, Paris, Sept. 24, 1890. Letter from Biskra to the Editor by H.E. Cardinal Lavigerie, and Portrait Group of Native Christian Priests, &c., and of Revs. MM. Hauttecœur, Livinhac, and Girault. Young Negroes' Letters. The Pro-Vicariat of Nyasa. The Work of the Missions. Deaths, New Missionary Sisters, &c.

COLONIAL SOCIETIES, JOURNALS, &c.

Adelaide. Proceedings of the South Australian Branch of the Royal Geographical Society of Australasia. Vol. I., First Session, 1885-86.

Brisbane. Proceedings and Transactions of the Queensland Branch of the Geographical Society of Australasia. Vol. II., Parts 1-3, 1886-87; III., 1 and 2, 1887-88; IV., 1888-89; V., 1 and 2, 1889-90.—1888-89: Sudest and the Louisiade Archipelago, New Guinea, by the Hon. J. Douglas, C.M.G., F.R.G.S. Geographical Distribution of Plants, by W. Soutter. Geographical Notes, &c.—1889-90: His Honour Sir William MacGregor's Ascent of Mount Victoria and Explorations of the Owen Stanley Range, British New Guinea, by J. P. Thomson, F.R.S.G.S., &c. (with map). The Gulf of Carpentaria, by Capt. William Campbell Thomson. Geographical Notes. The Torres Group: The Natives and their Ways, by Douglas Rannie, Esq. Notes Made on the Fly River, British New Guinea, by Captain James M. Hennessy, B.N.G. steamship Merrie England. Notes on the Brisbane River Floods, by J. P. Thomson, F.R.S.G.S., &c. Chatham Islands, by John A. Robertson, Esq. L.S., (with map). Sir William MacGregor's Upper Fly River, British New Guinea, by J. P. Thomson. Geographical Notes.

Melbourne. Transactions of the Victorian Branch of the Royal Geographical Society of Australasia. Vols. III. and IV., 1885-86; V., Parts 1 and 2, 1887-88; VI., 1 and 2, 1888-89; VII., 1 and 2, 1889-90; VIII., 1, 1890.—VI.: (2) Some Coral and Volcanic Islands of the Western Pacific, by F. A. Campbell, C.E. (with map and illustrations). The Northern Shan States, by G. S. Streeter, F.R.G.S. The Historical and Commercial Aspects of the New Hebrides, by Rev. D. Macdonald (with map).—VII.: (1) Synopsis of the History of Geography, by Miss M. S. Hooper. Dr. Sir William MacGregor's Ascent of Mount Owen Stanley, by J. B. Cameron.—VIII.: (1) The hitherto Unexplored West Central Australia, by M. H. Tietkins, F.R.G.S. (with map).

Melbourne. Victorian Year Book. By H. H. Hayter, C.M.G. 1883-84, 1884-85, 1885-86, 1886-87.

Quebec. Transactions of the Geographical Society of Quebec. 1885, 1886-89.—1886-89: Lake Mistassini—Geological, Botanical, &c., Report. The Landfall of Cabot, by J. P. Howley. Natives of the Copper River, by H. T. Allen. Notes on Labrador, by H. Puyjalon. Primitive Races of North America, by A. Gagnon. Winter Navigation of the St. Lawrence, by N. Le Vasseur. Table of Ocean Distances.

Sydney. Proceedings of the New South Wales Branch of the Royal Geographical Society of Australasia. Vols. III. IV., 1885-86. Report on New Guinea, by J. F. Mann. Some Sixteenth Century Maps of Australia, by J. H. Maiden, F.L.S., F.R.G.S. Exploration of New Guinea, by Captain Everill (with map).

Toronto. Annual Report of the Canadian Institute for 1887, 1888, 1889, being part of Appendix to the Report of the Minister of Education, Ontario, with illustrations of pottery, clay pipes, stone pipes, stone implements, flints, &c., of ancient Indians.—1887: Reports of Sections of the Institute, Geological, &c. Archæological Report, illustrated. Tidd's Island. Hay Island.—1888: Reports of Sections. Archæological Report, illustrated.—1889: Reports of Sections. Archæological Reports, illustrated. Townships of York and Vaughan. Geographical Distribution of French Relics in the Counties of York, Ontario, and Simcoe. Museum Specimens.

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FOREIGN SOCIETIES, JOURNALS, &c.

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Stockholm (Utsigt af (Panorama of) Stockholm och dess Omgifningar fran Belvédère). ½ft. by 7ft. 1890.

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THE WORLD.

Illustrated Reference Map of the World, highly coloured (Canada on the reverse side), showing coins, flags, architecture, &c., of various countries. 4½ft. by 3ft. H. C. Tunison, Toronto.

Library Chart of the World on Mercator's Projection. By John Bartholomew. 4½ft. by 5¾ft. Geo. Philip and Son, London.

The British Colonies and Possessions, on a uniform scale of 1/7,603,200. 4ft. by 4¾ft. E. Stanford, London, 1885.

The World. Commercial Chart. By J. Bartholomew. With insets of Central Europe, India, South Africa, Canada, &c. 50in. by 68in. G. Philip and Son, London and Liverpool, 1891.

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A new, plaine, and exact map of Asia, described by N. I. Vischer, and rendered into English, with the habits of the countries and manners of the chiefe citties. 14in. by 18½in. John Overton, London, 1668.

Photo-Relief Map of Asia. By H. F. Brion and Rev. E. McClure, M.A. Scale, 450 miles to inch. 12in. by 15in. Society for Promoting Christian Knowledge, London.

Asia. Karte von Asie bearbeitet von F. Handtke. Scale: 1/18,886,000. 2ft. by 2¼ft. Carl Flemming, Glogau, 1889.

Asia (General Map). Scale, 1/9,218,880. 3¼ft. by 4ft. W. and A. K. Johnston, Edinburgh and London.

Asia. 4ft. by 5ft. Published by Committee appointed by S.P.C.K. and the National Society. E. Stanford, London, 1882.

Armenia, showing some of Rivers, Lakes, Coasts, and Towns. 39° E. to 51° E. 36° N. to 42° N. 3¼ft. by 5ft. (V.)

China. The Interior, chiefly from Du Halde and the Jesuits, 1710 to 1718, and the Sea Coast, from Modern Authorities. 98° E. to 123° E., 42° N. to 15° N. 1¼ft. by 1ft. E. Stanford, London.

China (part of). Famine Districts. Scale, 30 miles to an inch. 113° E. to 122½° E., 31° N. to 41° N. 23in. by 18in. A. Reid, Newcastle.

Asia, Central. Illustrating Mr. Molesworth's route from Shanghai to St. Petersburg, showing towns and rivers in Siberia. 5ft. by 7ft. (V.)

Chinese Coins. 8 Plates. Drawn by Mr. E. F. Steinthal, from Consul Gardner's designs. 2ft. by 2½ft.

China. The Yang-tze Kiang, from Hankow to Ping-shan, from the survey of Captain T. Blakiston, R.A. By John Arrowsmith. In 2 sheets. 1¾ft. by 2ft. Sheet I. (East): Hankow to Pa-tung, 3 sections of river, each 2ft. long. Sheet II. (West): Pa-tung to Ping-shan. 4 sections of river, each 2ft. long. Index Map of River, 2ft. by 7in. 104° 20′ E. to 114½° E. 28½° N. to 31° 20′ N.

Burmah, Siam, and Shan States, Parts of. Showing proposed India, Siam, and China Railway. Compiled from the Survey of H. S. Hallett, M. Inst. C.E. 97½° E. to 102° E. 16½° N. to 20½° N. 8ft. to 8¼ft. E. Weller, lith., London.

Burmah, Tonquin, Siam, &c. Rivers, Towns, and States. Coloured. In 2 sheets. Upper: 92° E. to 112° E. 28° N. to 19° N. 8¾ft. by 4½ft. Lower: 92° E. by 112° E., 19° N. to 10° V. 8¾ft. by 4½ft.

Palestine, Western. In 26 sheets, from surveys conducted by Lieutenants C. R. Conder and H. H. Kitchener, C.E., 1872-77. Scale, 1/633,600. 34° 12′ E. to 35° 40′ E. 31° 10′ N. to 33° 25′ N. 12¾ft. by 7ft. Printed for the Committee of the Palestine Exploration Fund, at the Ordnance Survey Office, Southampton, 1880.

Palestine, Western. On roller from above. Palestine Exploration Fund.

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Karte von Afrika, bearbeitet von F. Handtke. Scale, 1/14,500,000. 2ft. by 2¼ft. C. Flemming, Glogau.

Africa. Spezial-Karte von Afrika, entworfen von H. Habenicht, bearbeitet von demselben, B. Domann and Dr. R. Lüddecke. Scale, 1/4,000,000. 6½ft. by 6ft. Justus Perthes, Gotha, 1885.

Africa. Tiré de l'ouvrage: Les Missions Catholiques d'Afrique en 1889, par le Baron Léon Bethune. Supplément des Missions Catholiques. Scale, 1/20,000,000. 1½ft. by 1½ft. Société de St. Augustin.

Africa. Carte de l'Afrique: á l'echelle 1/2,000,000. In 62 sheets. About 14ft. by 13ft. Publié par la Service Geographique de l'Armée, Paris, 1886.

Africa. By E. Weller, F.R.G.S. Scale about 260 miles to the inch. 1/16,500,000. 20in. by 23in. G. Philip and Son, London.

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Afrika. Physikalische Wandkarten. In 6 sheets. By H. Kiepert. Scale 1/8,000,000. 48in. by 45in. D. Reimer, Berlin, 1873.

Africa. A new and most exact map of Africa. Described by N. I. Vischer. John Overton, London, 1658.

Africa. 1592. 24in. by 36in.

Three Outlines of Africa. 3ft. 6in. by 3ft. (V.)

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Egypt, &c. (Rough Sketch Map). Rivers and Towns. 50° E. to 20° E., 35° N. to 0°. 5½ft. by 4½ft. (V.)

Egypt and the Egyptian Soudan. Chief Towns, Coasts, and Rivers. 30° E. to 45° E., 11° N. to 33° N. 90in. by 72in. (V.)

Soudan (Part). Facsimile of Map drawn by General Gordon, at Khartoum, March, 1874, of his route from Suakin to Berber and Khartoum. Scale about 1/1,325,000, or 21 miles to an inch. E. Stamford, London, 1885.

Red Sea (Lower Part). Parte Meridionale del Mar Rosso. Dedicated to His Majesty the King of Italy. Scale 1/15,000,000. 37° E. to 45° E., 21° N. to 10° N. 2¼ft. by 1¾ft. C. Virano, Roma, 1885.

Red Sea (Lower Part), Abyssinia, &c. Carta dell' Alto Egitto, dell Abissinia, e delle Regioni Limitrofe. Scale 1/5,000,000. 23° E. to 55° E., 22° N. to 1½° N. 1½ft. by 2¼ft.

Massowa. Rada di Massaua e Baja di Annesley. Scale 1/500,000. 38° 55′ E. to 40° 35′ E., 15° 50′ N. to 14° 40′ N. 11in. by 1ft. 2in. Roma, 1885. Foto lit. del Comitato di Artiglieria e Genio.

Equatorial Africa. Political Map. By J. G. Bartholomew, F.R.G.S. Scale 1/5,600,000. 5° E. to 46° E., 12° N. to 12° S. 20in. by 33in. Imperial British East Africa Co., July, 1890.

East Africa. The Country East of Lake Nyassa. Compiled from the documents of the Rev. W. P. Johnson. 33° E. to 39° E., 8° S. to 18° S. 1½ft. by 11in.

Map of Journey to Kilwa, 1883. By Consul H. E. O'Neill. Scale 1/1,000,000. 35° E. to 41° E., 14° S. to 16⅔° S. 1ft. by 2ft. Published for the Proceedings of the Royal Geographical Society, 1884.

Africa (East Central). Karte von Central-Ost-Afrika von Dr. Paul Englehardt and I. V. Wensierski. Scale 1/3,000,000. 27° E. to 45° E., 2° N. to 16° S. 2ft. by 2ft. J. H. Neumann, Berlin, 1886.

Magwangwara District. Sketch Map. By Rev. W. C. Porter. Scale 8 miles to the inch. 30° 40′ E. to 37° 50′ E., 9° 20′ S. to 11° 40′ S. 22in. by 30in. (V.)

Eastern Africa (Part of). Prepared for the Company by E. G. Ravenstein, F.R.G.S., &c. Scale 1/500,000 (8 miles to the inch). 33° E. to 41° E., 1° N. to 5° S. 4½ft. by 6ft. Printed and Published for the Imperial British East Africa Company by G. Philip and Son, London, 1889.

Eastern Central Africa. Showing Field of Universities' Mission. European Protectorates coloured. 28½° E. to 42° E., 4° N. to 19° S. 1½ft. by 11in. John Bartholomew & Co., Edinburgh.

East Africa. Deutsch-ostafrika. J. I. Kettler's Spezial Wandkarte. Scale 1/3,000,000. 29° E. to 54° E., 14° S. to 14° N. 3½ft. by 3ft. Geographischen Institut zu Weimar.

Geological Sections of Witwatersrandt Gold Fields, Seuth Africa, 1889. By T. D. Williams, F.G.S., &c. 4 sections. B. B. Bingley, Halifax.

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South Africa. Compiled by Rev. A. Merensky. Scale 1/2,500,000. 11° E. to 37° E., 15° S. to 35° S. 3ft. by 3¾ft. J. H. Newmann, Berlin, 1888.

Central Africa. Showing Route of Emin Pasha Expedition. 10° E. to 40° E., 7° S. to 20° N. 5ft. by 5½ft. (V.)

Central Africa. Stanley in Africa, from 1867 to 1889. Scale 150 miles to the inch. 19in by 25in. G. Philip and Son, London and Liverpool.

Central Africa, by J. Bartholomew. Scale 125 miles to the inch. 5° E. to 45° E., 5° N. to 23° S. 15½in by 22in. G. Philip and Son, London, 1884.

Central Africa. L'Afrique Equatoriale entre le Congo et l'Ogoué. Par Dr. J. Chavanne. Scale 1/2,000,000. 10° E. to 18° E., 0° to 7° S. 16in. by 18in. Institut National de Géographie, Bruxelles, 1884.

Central Africa. Inner Afrika und der Kongo-Staat. Scale 1/8,000,000. 11½in. by 13½in. Geographisches Institut, Weimar.

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Central Africa. Map Illustrating the Journeys of H. M. Stanley in the Emin Pasha Relief Expedition. By T. B. Johnston. Scale 1/10,300,000, 163 miles to an inch. 5° E. to 45° E., 7° N. to 21° S. 1¼ft. by 1⅔ft. W. and A. K. Johnston, Edinburgh and London, 1890.

Central Africa. By J. G. Bartholomew, F.R.G.S. Showing Spheres of Influence, June, 1890, Stanley's Route, &c. Scale 1/5,600,000. 5° E. to 43° E., 6° N. to 19° S. 1¾ft. by 2½ft. J. Bartholomew & Co., Edinburgh, 1890.

Central Africa. Showing H. M. Stanley's Route from Yambuya to Lake Albert Nyanza. 3° E. to 43° E., 15° N. to 15° S. 1½ft. by 1⅔ft. W. and A. K. Johnston, Edinburgh and London, 1889.

West Africa. Carte du Haut Niger au Golfe de Guinée, par le Pays de Kong et le Mossi, levée et dressée de 1887 à 1889. Par Capitaine L. G. Binger, par ordre de M. Etienne, Sous-Secretaire d'Etat des Colonies. Scale 1/1,000,000. 7° W. to 0° W., 4½° N., to 14° F. 3¾ft. by 4½ft. Service Geographique des Colonies. Lith. F. Appel, Parrot & Cie., Paris.

Niger Country. Timbuctoo to Lake Tchad. 3° W. to 16° E., 18° N. to 5° N. Rough Map. Rivers and Towns. 8ft. by 6ft. (V.)

Congo Free State. Scale 1/4,000,000. Institut Nationale de Geographie, Bruxelles, 1885.

Congo Free State. By H. M. Stanley. Scale 45 miles to the inch, about 1/300,000. 9° E. to 35° E., 10° N. to 13° S. 35in by 41in. E. Stanford, London.

Congo. Depuis l' Equateur jusqu' à l'ocean. Scale 22 miles to the inch. 12° E. to 19° E., 0° to 6½° S. 21in. by 22in. Institut National de Geographie, Bruxelles, 1883.

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AMERICA.

A new and most exact map of America, described by N. I. Vischer, and done into English, &c. 13½in. by 18in. John Overton, London (about 1636).

Canada. Government Map of Canada, from Red River to the Gulf of St. Lawrence. Compiled by Thos. Devine, Head of Surveys, Upper Canada Branch, Crown Lands Department, 1859. 61° W. to 97° W., 40° N. to 51° N. 2½ft. by 5¼ft. Thompson & Co., Quebec; E. Stanford, London.

North-West Territories (Dominion of Canada). 120° W. to 80° W., 49° N. to 62° N. 2¼ft. by 3½ft. Dominion Lands Office Department of the Interior, Ottawa, 1883.

Canadian Pacific Railway System. Scale 84 miles to the inch. 12in. by 39in. E. Stanford, London, 1886.

Grand Trunk Railway of Canada. 13in. by 26in. Rand, McNally, & Co., engravers, Chicago.

Manitoba (part of), showing Dominion and Railway Lands Surveyed. Scale 9 miles to the inch. 96° 30′ W. to 101° 30′ W., 49° N. to 51° N. 16in. by 25in. Canadian Pacific Railway Co., Montreal.

Newfoundland (outline map), le French Shore et les Grands Bancs. Par Edouard Marbeau. 51° W. to 62° W., 45° N. to 52° N. 14in. by 14in. Revue Française Exploration, April, 1890.

West Indies (outline map). Scale about 16 miles to the inch. 72in. by 100in. (V.)

Honduras. Mapa de la Republica de Honduras. Par A. T. Byrne, C.E., M.E. Scale 1/1,000,000. 83° W. to 90° W., 12° N. to 18° N. 1¾ft. by 2½ft. G. W. and C. B. Colton & Co., New York, 1886.

Honduras, British. Scale about 2 miles to the inch. 86° W. to 90° W., 19° N. to 15° N. 160in. by 100in. (V.)

United States and Lower Canada (on reverse side various parts of the World), showing railroads, counties, principal towns, rivers, and mountains. Scale 55 miles to the inch. 125° W. to 70° W., 26° N. to 52° N. 4½ft. by 3ft. Rand, McNally & Co., Chicago.

United States. Wall Atlas, constructed and drawn under the direction of A. Guyot, by E. Sandoz (in 4 sheets). Scale 1/3,500,000. 38in. by 54in. Chas. Scribner & Co., New York.

United States (part of). 77° W. to 91° W., 32° N. to 40° N. 10in. by 16in. Southern States Coal, Iron, and Land Company.

United States (South), showing railway and steamship lines operated by the Southern Pacific Railway Company. 16in. by 30in. Southern Pacific Company, 1890. Poole Bros., map engravers, Chicago.

North Pacific Railway (U.S.). 86° W. to 126° W., 50° N. to 38° N. Stations, rivers, lakes, and states (coloured). 9½ft. by 4⅓ft.

Texas (railway map). Scale 40 miles to the inch. 17in. by 20in. Galveston, Harrisburg, and San Antonio Railway Company.

Florida. Railroad and township map. By C. Granville. Scale 16 miles to the inch. 21½in. by 30in. South Publishing Company, New York, 1886.

Missouri and Arkansas. 3ft. by 1¾ft. St. Louis, Iron Mountain, and Southern Railway Company, 1886. Rand, McNally & Co., printers, Chicago.

Washington (West) and Oregon (North). Map showing land grant. Scale 6 inches to the mile. 2½ft. by 2½ft.

Washington (East), Montana, and Idaho. Map showing land grant. 1½ft. by 3½ft. Northern Pacific Railway Company, 1887. Rand, McNally & Co., printers, Chicago.

California. Climatic map. Scale about 30 miles to the inch. 2ft. by 9in. Southern Pacific Railway Company, 1887. Crocker & Co., printers, San Francisco.

Palèrmo Colony, Butte County, California. Bird's-eye view. McAfee and Baldwin, San Francisco.

South America. By F. Handtke. Scale 1/13,000,000. 28in. by 22in. Carl Flemming, Glogau, 1889.

Guiana. Kaart van Guiana naar de beste bronnen en eigen opnemingen geteekend in 1888 door W. L. Loth, Gouvernements Landmeter in Suriname (showing territory in dispute between Britain and Venezuela). Scale 1/1,000,000, with enlarged plans of the capitals, scale 1/25,000. 51½° W. to 61° W., 2° N. to 8½° N. 29in. by 41in. J. H. de Bussy, Amsterdam, 1889.

Argentine Republic. Showing especially pasture lands and uncultivated lands. By E. Weller. Scale 65 miles to the inch. 36in. by 24in. Published by the Information Office of the Argentine Republic, London.

Peru. By H. Guillaume, F.R.G.S., Consul-General for Peru, Southampton, 1888. 60° W. to 81° W., 2° S. to 18° S. 17in. by 22in.

Peru (part of). By H. Guillaume, F.R.G.S. Sketch map illustrating a paper on recent explorations of Colonel A. R. P. Labre, &c., in the vicinity of Madeira, Perus, Madre de Dios, Urubamba, and Ucayali Rivers. 63° W. to 75° W., 7° S. to 15° S. 17in. by 25in.

Venezuela. Mapa Fisico y Politico de los Estados Unidos de Venezuela, with plans of chief towns.

Map of Venezuela. 51° W. to 75° W., 1° S. to 13° N. 1½ft. by 1ft. 2in. Printed at the Government Printing Office, 1884.

Venezuela. Mapa Fisico y Politico de los Estados Unidos de Venezuela, with eastern portion enlarged to show territory in dispute between Venezuela and Britain.

Map of Venezuela. 1½ft. by 1ft. 2in.

Eastern Venezuela. 57° W. to 64° W., 2° N. to 12° N. 1½ft. by 1ft. Printed at the Government Office, 1887.

OCEANIA.

Oceania. Karte der Inseln des Weslichen Grossen Oceans. Scale 1/15,000,000. 130° E to 150° W., 25° N to 450° S. 22in. by 23in. L. Friederichsen, Hamburg, 1879.

Samoa. By Herkt. Scale 1/850,000. 187° E. to 191° E., 13° S. to 14° 30′ S. 8in. by 19½in. Carl Flemming, Glogau, 1889.

British New Guinea. Rough map. 5ft. by 6ft. (V.)

New Guinea (south east). Scale 4½ miles to the inch. 146¾° E. to 148° E., 8° S. to 10¼° S. 36in. by 36in. Surveyor-General's Office, Brisbane, 1889.

British North Borneo. 115° E. to 119⅓° E., 3¼° N. to 7¼° N. 2½ft. by 3½ft. Published by E. Stanford, for the British North Borneo Company, 1888.

New Zealand. Coast Line and Chief Rivers. No. 76. 167½° E. to 178½° E., to 34° N. to 45° N. 2½ft. by 1⅓ft. Ruddiman, Johnston, & Co., London.

The Central Thermal Springs North Island, New Zealand. Showing Lakes, Rivers, Mountains, and Towns. Scale 1in. to 5 miles. 1⅜ft. by 1⅓ft. Mount Cook, its Glaciers and Lakes, South Island, New Zealand. Scale 1in. to 4 miles. 1⅜ft. by 1⅓ft. General Survey Office, Wellington, New Zealand, 1888.

Interior Cold Lakes, Otago, New Zealand. Scale 4 miles to the inch. 17in. by 23in. Western Lakes and Sounds, Middle Island, New Zealand. Scale 8 miles to the inch. 17in. by 23in. Compiled and drawn by T. M. G. Hills and W. Deverell. Published by James McKerrow, Surveyor-General, Wellington, New Zealand, 1888.

Chatham Islands. From surveys by S. P. Smith and John Robertson, 1868 and 1883. Scale 1in. to 2 miles. 176° W. to 177° W., 43° 40' S. to 44° 12' S. 1⅔ft. by 2ft. (2.) General Survey Office, Wellington, New Zealand, 1887.

Weather Charts of Australasia for 1889-1890 (about 170). Clement L. Wragge, Government Meteorologist. 1½ft. by 1¾ft.

Maps of Queensland. Showing Amount of Cloud, Rainfall, &c., on various dates, 1887. 2ft. by 1¾ft. Printed for the Queensland Post and Telegraph Department, Meteorological Office, at the Government Printing Office, Brisbane.

Victoria. Rivers, Counties, Lakes, and Towns. 140° E. to 151° E., 34° S. to 39½° S. 6½ft. by 4⅓ft. Constructed and engraved at the Surveyor-General's Office, Melbourne. Published by authority of the Government, Aug. 15, 1872.

EUROPE.

North Pole. Map. 20ft. by 20ft. 1870.

North Polar Chart. (Frontispiece to W. and A. K. Johnston's Royal Atlas.)

Europe (von J. Ritter von Scheda). Scale 1/2,592,000. 6ft. by 7½ft. Artaria & Co., Wien, 1872 (revised in 1877).

Europe. By J. W. Lowry, F.R.G.S. 17in. by 24in. *Weekly Dispatch* Atlas.

Photo-Relief Maps of Europe. By H. F. Brion and Rev. E. McClure, M.A. (Series No. III.) Scale 220 miles to the inch. 12in. by 15in. (1) Series No. II. Plain. (2) No. III. Rivers, towns, &c. Society for Promoting Christian Knowledge, London.

Europe. Karte von Europa, bearbeitet von F. Handtke. Scale 1/9,350,000. 2ft. by 2¼ft. Carl Flemming, Glogau, 1889.

Coasts of Europe (4 charts). 1. The North Sea. Coasts of Southern Norway, Denmark, Holland, Belgium, and England. 3° W. to 11° E., 62° N. to 57° N. 2ft. by 3ft. (corrected to 1876). 2. The English Channel. Southern Coasts of England and Ireland, and North Coast of France. 12½° W. to 1½° E., 52° 15' N. to 48° N. 4½ft. by 2ft. (corrected to 1880). 3. From the British Islands to the Mediterranean Sea. 14° W. to 2° E., 52½° N. to 35° N. 2ft. by 3ft. (corrected to 1879). 4. The Mediterranean. 6° W. to 36° E., 47½° N. to 26° N. 3ft. by 2ft. (corrected to 1872). Published according to Act of Parliament at the Hydrographic Office of the Admiralty.

Europe. Scale 140 miles to the inch. 19in. by 24in. G. Philip and Son, London and Liverpool.

Central Europe. Wall map. By A. Guyot. Scale 65 miles to an inch. 7° E. to 32° E. 42° N. to 60° N. 20in. by 26in. Ch. Scribner & Co., New York.

Norway. Coast Maps. Key Map: Scale 1/2,400,000 (Oversigtskart til de af Norges Geografiske Opmaling udgivne Kystkarter), 1885. Maps issued from 1868 to 1889.

General Maps: A. North Sea (2 plates). Scale 1/1,000,000. (1) Faerder to Utsire; (2) Utsire to Kin; (3) Kin to Trondhjem; scale 1/350,000. (4) Trondhjem to Tromso; (5) Tromso to Russian boundary; scale 1/800,000. B. Maps 1-13; scale 1/200,000.

Special Maps: A. 1-14; scale 1/100,000. B. 1-5, 7, 9a, 9b, 10a, 10b, 11a, 12a, 12b, 13a, 13b, 15-35, 37-41, 43; scale 1/50,000. Nos. 1, 2 (Ny Raekke), scale 1/50,000.

Fishing Maps: 1 (4 plates), 1/100,000. 1870; 2 (4 plates), 1/100,000, 1869; 3 (2 plates), 1/200,000, 1873; 4 (3 plates), 1/100,000, 1887. Norges Geografiske Opmaling.

Norway. Key map, 1/200,000, Southern Norway, in 18 sheets; scale 1/400,000. Sheets I. to IX. 15in. by 18in.

Norway County Maps, scale 1/200,000: Bratsbergs-amt. (in 2 sheets), 1857; Tromso-amt. (in 4 sheets), 1874; Smaalehnenes-amt., 1826; Buskeruds-amt. (in 2 sheets), 1854; Bergen (South)-amt. (in 4 sheets), 1857; Bergen (North)-amt. (in 4 sheets), 1880; Akershus-amt., 1827; Christians-amt. (in 3 sheets), 1845; Nedenes-amt. (in 2 sheets), 1858; Stavanger-amt. (in 2 sheets), 1866; Hedemarkens-amt. (in 3 sheets), 1829; Grevskabernes-amt., 1832; Romsdales-amt. (in 4 sheets), 1882; Lister oc Mandals-amt., 1862. Norges Geographiske Opmaling.

Norway. Topographical Map of Norway; scale 1/100,000; 9, A, B, C, D; 10, A, B, C, D; 14, A, B, D; 15, A, B, C, D; 16, C, D; 19, B, D; 20, A, B, C, D; 21, A, C; 22, A, B; 23, A; 25, B, D; 26, A, C; 29, B; 30, D; 31, B; 42, A, C, D; 43, B, C, D; 45, D; 46, A, B, C, D; 47, A, B, C, D; 48, B; 49, A, B, C, D; 50, A, B, C, D; 51, C, D; 52, B; 53, A, B, C, D; 54, A, B, C, D; 56, A, B; 57, B. Each 13½in. by 18in. Geological Map of Norway (coloured); scale 1/100,000; 9, D; 10, C; 14, B, D; 15, A, C; 16, D; 19, B; 20, A, C; 22, B; 25, B; 26, A, C; 46, A, B, C, D; 47, C, D; 49, B; 50, A, C. Each 13½in. by 18in. Norges Geographiske Opmaling.

Christiania District, scale 1/25,000, in 6 sheets, each 18in. by 22½in.; Northern Norway, by Professor P. Munch, 1852, scale 1/700,000, 34in. by 24in.; Southern Norway, geological map, 1877, scale 1/1,000,000, 34in. by 24in; Norway Map, coloured to show sea depths and heights of land, scale 1/2,400,000, 28in. by 22in. Norges Geographiske Opmaling.

South-Eastern Europe and South-Western Asia. The Eastern Question in Europe and Asia. 20° E. to 80° E., 25° N. to 52° N. 16in. by 26in. E. Stanford, London.

France (Stumme Physikalische Schul-Wandkarten. Der Lander Europa's bearbeitet von R. Kiepert; Frankreich). Showing coasts, rivers, mountains, and chief towns (no names). Scale 1/1,000,000. 5° W. to 8° E., 53° N. to 42° N. 4½ft. by 3½ft. Geogr. lith. Institu Steindr. v. W. Greve, Berlin.

Causses of the Cevennes. Showing rivers, towns, plateaus, and railways. 6½ft. by 4½ft. (V.)

Italy. (Carta della Circoscrizione Militare Territoriale del Regno, legge No. 1467, series 3. Scale 1/1,200,000. 7½° E. to 18½° E., 47° N. to 36½° N. 3½ft. by 2¾ft. Instituto Geographico Militare, 1884.

Italy. (Carta Generale del Regno Lombardo-Veneto, ridotta dalla Carta topographica nell'Instituto geographica Militare dell' I. R. Stato Maggiore Generale in Milano, 1838, riveduta, 1856. Scale 1/288,000. 8½° E. to 13¾° E., 44½° N. to 47° N. 3ft. by 5ft. Copied by the Anastatic Process in 1859, at the Ordnance Survey Office, Southampton. E. Stanford, London.

Southern Italy; Carte du Royaume de Naples et de la Sicile. 11½° E. to 18½° E., 43° N. to 36° N. 2½ft. by 2ft. E. Andrivean-Goujon, Paris, 1860.

Turkey (Carte de la Guerre Turco-Russe en Europe et en Asie, dressée par Erhard.) Scale 1/4,000,000. 1½ft. by 2¼ft. Erhard, impremerie, Paris. Hatchette & Co., Paris; E. Stanford, London.

Germany, General-Karte von Deutschland; Deutsches Reich, nebst Deutsch-Österreich und Schweiz. Bearbeitet von Handtke. Scale 1/1,825,000. 6° E. to 23° E., 56° N. to 45° N. 2½ft. by 2½ft. Carl Flemming, Glogau, 1889.

Turkey; Carte-Generale de l'Empire Ottoman en Europe et en Asie, dressé par Henri Kiepert. Scale 1/3,000,000. 16° E. to 52° E., 28° N. to 49° N. 34in. by 48in. D. Reimer, Berlin, 1867.

Balkan Peninsula. By F. Handtke. Scale 1/1,700,000. 16° E. to 30° E., 36° N. to 48° N. 31in. by 25in. Carl Flemming, Glogau, 1889.

Photo-Relief Maps of Scotland. By H. F. Brion and Rev. E. McClure, M.A. Scale 19 miles to the inch. 15in. by 12in. (1) with heights of mountains, &c., positions of chief towns (series No. II.); (2) rivers, counties, towns, &c. (series No. III.) Society for Promoting Christian Knowledge, London.

Scotland (Orographical map). By John Bartholomew, F.R.G.S. Scale 10 miles to an inch. 2ft. 9in. by 1ft. 10in. Adam and Charles Black, Edinburgh.

Outer Hebrides (Lewis and Harris). By John Bartholomew, F.R.G.S. Scale 2 miles to an inch. 2½ft. by 1⅝ft. A. and C. Black, Edinburgh.

Southern Norway. (Reisekart over Det sydlige Norge, ved Kaptein Per Nissen.) Scale 1/800,000. 13° E. to 14° E., 68° N. to 65° N. 3½ft. by 2¾ft. Alb. Cammermeyer, Kristiania, 1889.

Index to Ordnance Map of England and Wales. 1 inch to the mile. G. Philip and Son, London.

The British Empire. By W. Shawe, F.R.G.S. On a uniform scale of 1/7,800,000. Geo. Philip and Son, London.

Illustrated Map of the British Isles, with plans of the 14 chief towns. 2½ft. by 2ft. H. C. Tunnison, London.

Angleterre (England, Ireland, France, &c.) 10½in. to 10in. Atlas de Diègo·Homena Heliographie. J. Gaulthier, 1886.

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England and Wales. 3½ft. by 4ft. W. and A. K. Johnston, London.

England and Wales, "Excelsior Map." By G. W. Brown, F.R.G.S. 6° W. to 2° E., 55° 48′ N. to 50° N. 5ft. by 4ft. G. W. Bacon & Co., London.

England and Wales, Raw Products: Iron, Copper, Lead, Tin, Coal, and Salt. 72in. by 45in. (V.)

England, Manufactures: Cotton, Woollen, Linen, Silk, Chemicals, Machinery. 72in. by 45in. (V.)

Yorkshire and Lancashire (from Leeds to Manchester). By F. D. King. In four sheets. Sheet 1, 2° 18′ W. to 1° 54′ W., 53° 30′ N. to 53° 38′ N. 1⅜ft. by 2¾ft.

Outline Map of Lancashire. 2° W. to 3° 20′ W., 53° 15′ N. to 54° 30′ N. 2¾ft. by 2ft. Ledsham, Manchester.

Lancashire (the Countie Pallatine of Lancaster, described and divided into hundreds). 1⅜ft. by 1½ft. John Speed, London, 1610.

Buxton, Matlock, and Environs. Reduced Ordnance map. Scale 2 miles to an inch. 1½ft. to 1ft. W. H. Smith and Son, London.

Buxton. Reduced Ordnance plan. Scale 6in. to the mile. 1ft. by 1½ft. W. H. Smith and Son, London.

London (7 sheets). Scale 6in. to the mile. (1) City of London, 6in. by 10in.; (2) Chelsea, 13in. by 24in.; (3) Westminster, 14in. by 21in.; (4) Marylebone, 26in. by 24in.; (5) Finsbury, 26in. by 18in.; (6) Hackney, 25in. by 21in. (7) Southwark, 10in. by 21in. E. Stanford, London.

Manchester (from Failsworth to Worsley). Showing principal roads, rivers, and a few districts. 7½ft. by 4½ft. (V.)

Greater Manchester. Scale 1in. to the mile. 11in. by 12in. *Manchester City News*, March, 1883.

Manchester Drink Map. 23in. by 17in. United Kingdom Alliance, Manchester, 1889.

Plan: Free Trade Hall.

Liverpool. Scale 6in. to the mile. 17in. by 27in. J. Slater.

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LANTERN SLIDE LIST, 1890.

N.B.—All Slides, except those marked *, are square. (3¼in. × 3¼in.)

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1 **Map, England and Wales.**
2 Booth Hall, Manchester.
3 Booth Hall, group of members, 1888.
4 **Eastham, group of members, 1888.**
5 **Eastham, Ship Canal View.**
6 **Eastham, Ship Canal View.**
7 **Eastham, Ship Canal View.**
8 **Map, Manchester.**
9 **Swans.**
10 **Cattle.**
11 **Ashworth Valley, Heywood, group of members, 1890.**

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2 Athens.—Acropolis.
3 Athens.—Entrance to Acropolis.
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5 Athens.—Erechtheum.
6 Athens.—Temple of Jupiter.
7 Athens.—Theseum.
8 Athens.—Observatory.
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14 Patras.—Lighthouse.
15 Patras.—Shipping in Harbour.
16 Patras.—View further in Harbour.
17 Patras.—Old Venetian Castle.
18 Patras.—Moonlight, looking west.
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20 Vostizza.—Principal street.
21 Vostizza.—Street scene.
22 Vostizza.—Public well.
23 Vostizza.—Street scene.
24 Vostizza.—Native costume.
25 Vostizza.—Scene outside a Currant Agent's.
26 Bacharach (Rhine) view.
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3 Armenia.—Ruins of Ani.
4 Armenia.—Ruins of Ani.
5 Armenia.—Ruins of Ani.
6 Li Hung Chuan.
7 Chinese Lady and Child.
8 North Formosa.—Natives.
9 North Formosa.—View.

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12 Sultan and Wives.
13 Sultan and No. 1 Family.
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15 Wife and Son of Sultan.
16 Emperor as Priest.
17 Empress.
18 Emperor and Son (court dress).
19 Emperor's Dancing Girls.
20 Emperor's Body Guard.
21 Crown Prince.
22 Crown Prince.
23 Thirty-second Child of the Emperor.
24 Native Princess.
25 Court Dress.
26 Bride (in costume).
27 Bride and Bridegroom.
28 Instantaneous Group.
29 Girl (lower class)
30 Girls (chewing betel root).
31 Tapestry Worker.
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33 St. Ani (native beauty).
34 Native Gentleman.
35 Opium Smokers.
36 Tomtom Players.
37 Lady Musicians.
38 Musician.
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40 Actor.
41 Actor.
42 Theatrical Performance.
43 Native Sweetmeat Vendor.
44 Methods of Travelling.
45 Mail Steamer.
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47 Cocoa Palms.
48 Crater of Merapi.
49 Bamboo Bridge.
50 Military Parade Ground.
51 Saw Pit.
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53 Scenery of the Tropics.
54 Scenery of the Tropics.
55 Scenery of the Tropics.
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57 Samarong.
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62 English Gentleman's House, Batavia.
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64 Sumatra.—Padang Beach.

5 **Sumatra.**—Rice Stacks.
6 **Sumatra.**—Waterfall, Padang.
7 **Sumatra.**—Wedding Procession.
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9 Kabinda.—Porto Rico.
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12 Kabinda.—Cocoa Nut Palms.
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27 Kabinda.—Banana Plantation.
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29 Banana.—Creek.
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32 Banana.—British Factory.
33 Banana.—British Factory.
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37 Banana.—State Premises.
38 Banana.—State Premises.
39 Banana.—State Premises.
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61 Molembo.—Native Huts.
63 Congo River.—Railway Site.
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THE
MANCHESTER GEOGRAPHICAL SOCIETY.

RULES.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science, as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with Consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less-known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisation and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1 1s., or he may compound by one payment of £10 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceeding shall be as follows :—

(*a*) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.

(*b*) Presents, whether of money, books, maps, charts, instruments or specimens, made to the Society to be announced.

(*c*) The election of new members to be declared and the names of candidates to be read.

(*d*) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of this meeting shall be sent to every member within the United Kingdom, who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by twenty ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

THE COUNCIL.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the more efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and officers, and to summon, when necessary, special meetings of the Council and of Committees.

TREASURER.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the books of account shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

SECRETARIES.

49. The duty of the Honorary Secretaries shall be:—

(*a*) To conduct the correspondence of the Society and of the Council.

(*b*) To attend the meetings of the members and of the Council, and minute their proceedings.

(*c*) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission and the papers communicated to the Society, which have been directed by the Council to be read.

(*d*) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with *Foreign Societies* and with persons resident abroad

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society and to act under the instructions of the Council.

LIST OF MEMBERS,

December 31st, 1890.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate, * Affiliated Societies. All others are Ordinary Members.

HAberdare, The Right Hon. Lord, G.C.B.
Addyman, Thomas
Aldred, Thos., F.C.A.
Aldred, Wm., F.C.A.
Alexander, Bernard
AAlexander, W., jun.
AAllen, C. H. W., F.R.G.S.
Allen, Walker, jun.
AAnderson, Miss J. C.
Andreasian, Ohannes
AAndreasian, Mrs. O.
Anson, The Ven. Archdeacon
Armistead, Richard
Armitage, Benjamin, J.P.
Armitage, George Herbert
Armitage, Sam.
Armitage, S. F., J.P.
Armitage, V. K., M.A., J.P.
Armitage, William, J.P.
Arning, Charles
AArnold, W. A.
Arsenian, A. O.
AAshburn, William
AAshton, W. A.
Ashworth, Francis
Attkins, Edgar

Baddeley, John
Bagley, Ralph
Bailey, G. H.
Bailey, Alderman W. H.
ABaker, William
Balfour, The Right Hon. A. J., M.P.
Ball, Edward
Ballantine, Major R. F.
ABalmer, A. W.
Balmer, J. E.
Barclay, George
Barker, James
Barker, John Lees
Barker, Reuben C.
Barker, Richard
ABarlow, James
Barlow, John R.
Barlow, Samuel, J.P.
Baron, Alderman William, J.P.
Bass, Hermann
ABates, John, B.A.
Bates, Ralph, J.P.
ABatho, Thomas
Batty, Alderman William, J.P.
ABecker, Miss Lydia E.
Becker, Wilfred
Bedell, R. J.
Behrens, Charles
Behrens, Henry
Behrens, Frank
Behrens, Gustav
Beith, Gilbert, J.P.
Beith, J. A., J.P.
HBelgians, His Majesty the King of the, K.G.
ABelisha, B. I.
Bell, Frederick
Bentley, Isaac
ABerry, Harold
ABessant, W. S.
Beyerlein, Hans
ABickerton, Richard
Biema, C. Van
CBigot, Professor Leon
Birch, Herbert
Birley, Thomas Hornby
Black, Surgeon-Major J.M., F.R.C.S.E.
Blair, George Beatson
Blake, John Charles
Bleakley, Horace W.
ABleakley, Thomas
ABlelock, W.
Bles, A. J. S.
Boardman, James, F.C.A.
LBoddington, Councillor Henry, J.P.
HBodio, Professor Luigi
Bolton, H. Hargreaves
Bolton, Joseph
HBonaparte, Prince Roland
Booker, Joseph
Booth, Samuel
ABooth, William
Borsari, Prof. Ferdinando
Bostock, Thomas
ABottomley, J. Alfred
Bottomley, William, J.P.
Bowes, G. T.
ABowker, A. W.
ABradburn, James

ABradburn, S. J., F.S.A.
Bradley, William
Bradshaw, Edward
Brammer, G. F.
Bramwell, Samuel
ABramwell, Thomas
Braund, Herbert
Brettauer, L
ABrierley, J. Swallow
ABrierley, R. B., B.A.
Bright, Jacob, M.P.
ABroadfield, E. J.
ABrook, S. Hamill
ABrooks, E. J.
Brooks, Councillor Joseph
Broome, Joseph, J.P.
ABrothers, R. G.
CBryce, J. Annan
ABubier, Louis
ABuckley, B., J.P.
Buckley, W. H.
ABurnham, Samuel
*Burnley Lit. and Sc. Club
LBurton, Frederic
Burton, W. J.
Butler, E.
Butler, Samuel
Butterworth, Councillor J. H.
Bythell, J. K.

ACadman, Wm.
Calvert, D. R.
ACalvert, George W.
HCameron, Commander V. L., R.N., C.B.
Campion, G. G.
ACardwell, J. J.
Carter, J. N.
Carver, Benjamin, J.P.
Casartelli, Rev. L. C., M.A., Ph.D.
Cawley, Frederick
Chadwick, John
AChapman, Alfred
Cheetham, J. F., J.P.
Cheetham, Walter
Cheetham William
AChild, Rev. Cyril
Child, W. A.
Chivers, C. T.
Chorlton, Isaac
Chorlton, J. C.
AChurchill, Wm., jun.
Churchill, W. S.
Clapham, John, J.P.
AClarke, Charles A.
Clarke, J.
Clegg Neville
Clemson, T. W.
CClerke, Miss Ellen M.
ACockayne, Miss
ACohen, Sigismund, V.-Consul for Austria
ACohen, Meyer
Colbeck, Rev. A.
CColquhoun, A. R., F.R.G.S., M.I.C.E.
Cooper, Philip E.
Cooper, Reuben
ACooper, Thomas P.
ACopley, F. A.
Corbishley, Rev. Thomas
Core, Professor T. H., M.A.
Costeker, Charles
Costley, Thomas
ACottrill, J. J.
Coubrough, J.
ACoventry, Joseph
Cox, Dr.
Cranston, Rev. G.
Crewdson, Alfred
Crippin, Fred.
Crofton, H. T.
Cross, Edward
ACrossley Joseph
Crum, William G.
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Dehn, Rudolph
ADelmas, Philippe
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Dennis, Cammack
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HDevonshire, His Grace the Duke of, K.G.
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ADuckworth, Thomas
ADuffy, Henry
Duxbury, Anyon
ADyson, Humphrey
Dyson, John
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AFearnley, Frank
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AFielding, Jonathan
Fielding, Robert
Findlow, Percy
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AFletcher, Daniel
AFoden, J. B.
AFoden, Thomas
AFord, James
Forrest, Alderman Alex.
Foxcroft, T. W.
Frank, Ernest
AFrank, L.
Frank, Moritz
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AFreeman, W. C.
HFreshfield, Douglas W., F.R.G.S.
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AFullerton, Hugh
AFurniss, Martin

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Garnett, Stewart, J.P.
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Gartside, J. H.
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OGauthiot, Ch.
Gee, John
AGemuseus, Rudolph
Gerrard, James
Gill, John
AGlass, Percy
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Gleave, J.
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OGreshoff, Anton
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AGrindley, Charles W.
Gudgeon, Robert

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AHadfield, T.
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AHarrison, E.
AHarrison, J.
Harrison, J. Dilworth
Harrison, Wm.
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AHolland, John
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AMaybury, W. H.
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AMorris, John, jun.
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AMosley, James
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AOgden, Miss F. E.
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cO'Neill, H. E., H.B.M. Consul, Leghorn
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APerkins, Joseph
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cPlant, Senor Don Francisco S.
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AProvis, C. W.
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ARoss, Wm.
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ARushworth, Arthur
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ARushworth, W. A.
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ASowerbutts, T. W.
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AThacker, A. L.
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AWebster, John

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AWood, Thos.
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OCTOBER, 1891, *TO MAY*, 1892.

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